THIS WEEK'S National Petroleum NEWS

Coming Meetings

American Association of Petroleum Geologists, Gunter Hotel, San Antonio, Texas, March 19, 20 and 21.

Independent Oil Men of America, Chicago, March 23, 24. (Hotel not yet selected. Annual business meeting and election of officers).

American Chemical Society, Indianapolis, Ind., March 30 to April 3.

American Oil Burner Association, Ben Franklin Hotel, Philadelphia, Pa., April 13 to 18.

American Petroleum Institute, division of refining, semi-annual meeting, Hotel Statler, St. Louis, Apr. 15, 16.

National Petroleum Association, Hotel Cleveland, Cleveland, O., Apr. 23, 24.

American Gas Association, Natural Gas Department, Memphis, Tenn., May 11 to 14.

American Oil Chemists Society, New Orleans, La., May 14, 15.

Natural Gasoline Association of America, Mayo Hotel, Tulsa, May 19, 20, 21.

American Petroleum Institute, Division of Production, Baker Hotel, Dallas, Tex., June 3, 4.

American Society of Mechanical Engineers, National Oil & Gas Power meeting, Madison, Wis., June 15 to 18.

Geological Society of America, Mayo Hotel, Tulsa, Dec. 28 to 31.

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W. T. Atkins was elected March 12 a vice-president and director of the Skelly Oil Co. to fill the vacancy on the board created by the death of F. A. Pielsticker. Mr. Atkins was also made a member of the executive committee, the other members of which are W. G. Skelly, C. C. Herndon and H. M. Stalcup.

Mr. Atkins has been manager of the marketing department with headquarters at Kansas City. He has been with the Skelly company for the past eight years, being in direct charge of the building of stations and has personally selected most of the sites the company now occupies.

He is a vice-president of the Skelgas Co., subsidiary of the Skelly Oil Co. which markets liquefied gas.

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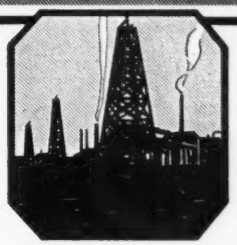

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Vol. 23 CLEVELAND, March 18, 1931 No. 11

Oklahoma City and East Texas Pools Are Greatly Over-rated

By William F. Lowe
N. P. N. STAFF WRITER

TULSA, March 14

THE East Texas area and the Oklahoma City pool are not the great menaces to the industry they are generally believed to be, it is now being said in many quarters.

There is reason to believe their touted potentials are considerably below the accepted figures and that neither occupies the key position so generally assigned to it.

In the near future a wider realization of the deficiencies of both areas will strip them both of much of their importance, it is believed. It is true that oil from any source at this time is unwelcome, particularly from a new source. However, the fact that it does exist, and that the potentials of the new area, as well as the old, are rated high is no reason why they should be accepted without question.

Such ratings are notably false and have an unmerited effect on the price postings.

Close examination of the known facts concerning the East Texas field and of comparative data from similar pools just across the line in Louisiana, has caused a large number of geologists and engineers to depreciate the area.

Not only do their findings point to a small per acre yield but also to the cold fact that operations there are not likely to be profitable. A 50 per cent increase above the present market for crude would not bring the takings much above the dollar matching stage, it is said by those who are studying this data.

Numerous papers have appeared recently on the East Texas area, most of them written by competent geologists who have made detailed studies of its stratigraphy. Almost without exception these men agree that the producing horizon is not the true Woodbine, but an erosional sand lapping up on the side of the old land mass and occupying the position of the Woodbine.

Some Texas geologists are of the opinion that it comes nearer to being the Eagle Ford, or they pass naming it entirely by merely stating it is correlative with the Woodbine of Louisiana.

These decisions lead to the conclusion its per acre yield cannot approach that of the true sand production as found in other fields, but will be more nearly like the old Caddo pool. The recovery in the latter is now about 4100 barrels per acre over a period of nearly 26 years. In order to give the new area as generous a yield as possible, 7500 barrels per acre, nearly double that of similar fields, will be used in the following calculations.

Estimates of the size of the new East Texas producing area vary from 180 miles in length down to 15 miles, though the major portion of the figures indicate that 20 to 30 miles is more likely to be the actual dimension. So irregular and inconsistent is the subsurface stratigraphy that opinions are being revised on the continuity of the pool. It has been definitely stated by certain geologists that the whole area would be productive and not spotted, but these statements seem to have been a little premature, as some of the late wells in the trend are not proving such a contention.

The Capps and Smith well, 10 miles south of the Joiner pool, though structurally normal, had a sand so tightly cemented that oil could not be forced into it. A similar condition is being found in Marion and Harrison counties. The Kilgore and

Lathrop pools have sands that show a good porosity, though the most optimistic estimates range only up to 18 per cent.

The width of the pool is quite generally conceded to be two miles, though a considerable variation is likely since the deposition was that of a shore line, with all the irregularities that this implies.

By taking a mean of the many dimension proposals and giving the new area a length of 25 miles and a width of two miles, the possible acreage totals 32,000. This does not admit of any barren stretches but is all taken as productive acreage, an assumption that makes of it a pool without a parallel.

With a 15 per cent porosity, a figure that seems fair in view of the various estimates, a 30 per cent recovery and an average sand thickness of 20 feet, the per acre yield would be in immediate vicinity of 7500 barrels. This gives the whole area a total potential ultimate of 240,000,000 barrels.

If the above figures are even approximately correct, and there is reason to believe they are fairly generous it can readily be seen that profits in East Texas are not going to be excessive. It costs from $20,000 to $25,000 to drill a well. Lifting costs during the life of the pools are likely to average at least 15 cents per barrel and the present price is 50 cents or less, mostly the latter.

On the basis of these figures, an 80-acre lease, with one well to 10 acres, would gross $262,500, after the one-eighth royalty was deducted. Subtracting from this sum the cost of drilling, lifting and operating during the life of the lease, the operator might realize as much as five or 10 per cent on his investment in a long period of years.

ONE of the worst fallacies in connection with the operations of the Oklahoma City pool has been the estimated potential. The figure was allowed to grow beyond all reason as estimates were made of new wells based on a few minutes flow and turned in as a 24-hour potential.

It was claimed at one time the pool was capable of making as much as 7,000,000 barrels a day, though such assertions were founded on mere projection of short spurts. Later gauges were taken for periods of four hours, or were supposed to be so taken, and the figure was cut to 6,000,000 barrels. However, this figure was too high even for the Oklahoma Corporation Commission and their calculations, for proration purposes, were based on one-third of this amount, a more nearly possible potential. This figure is considered high by men in a position to know, for it fails to take into consideration the great decline that has already taken place in the pool.

IT is thought possible that, if all the wells in the Oklahoma City pool were opened wide, the first 24-hour gauge might be in the neighborhood of 1,500,000 barrels. The second 24 hour period would more than likely see a 20 per cent decline from this gauge, and by the end of a week the daily production would be well below 1,000,000 barrels. Those wells that had not sand cut their way to freedom by that time would show a decline of close to 50 per cent. There are any number of illustrations in the pool to prove that much of the touted potential is pure fiction, or of such a temporary character that to carry it further is but stating a wish.

The following data on the three pay zones is illuminating. The figures given are not mere wild guesses, but are the result of careful estimates made by the petroleum engineers of several major companies and represent the general concensus of opinion regarding the potential and future possibilities of the Oklahoma City pool.

The three producing zones are the lime area, the lower Simpson or intermediate zone, and the Wilcox sand belt on the outer edge. They have produced to date approximately 19,000,000 barrels, 23,000,000 barrels and 9,000,000 barrels respectively, a total of 51,000,000 barrels. The number of producing acres in each zone is 1300, 4000, and 1900 respectively. The estimates on the ultimate per acre yield within these zones varies with the size of the holdings of the company solicited for figures, those given herewith being a compromise between several extremes. The lime zone is given a possible 16,000 barrels, the lower Simpson 22,500 barrels and the Wilcox sand tops the list with the generous figure of 60,000 barrels to the acre.

In analyzing these figures, on which there may be questions both ways, some interesting facts are brought to light. The lime zone is practically through at the present time and by the end of the year should be entirely out of further reckoning. Water has just about taken the whole zone so that, for future calculations, the pool assumes the general outline of a great C instead of an elongated O slightly flattened on one side. This will reduce the producing acreage consideration from a total of 7200 acres to 5900 acres in the near future.

A glance at the production initials for the wells in the intermediate zone at the south end of the pool, leads to the conclusion that the estimated per acre yield of 22,500 barrels was made by a man wearing rose colored glasses. Not only do the records of most of the wells fail to support such an estimate but the water situation in the area is anything but nice. The same zone at the north end of the pool is not quite as bad, for there are a few outstanding leases that help to raise the general average. However, even the north end is not free of water, and rock pressures are threatening to be but a third of their original 2200 pounds within the not far distant future.

THE Wilcox sand, by far the most important producing horizon in the pool, will have a few really spectacular recoveries. The major portion of these will be at the north end where the dips away from the structure are considerably less than those on the south. In estimating the per acre ultimate recovery for this sand there is a wide divergence of opinion, some engineers putting it as low as 40,000 barrels while others carry it up to 75,000 barrels. For this reason 60,000 barrels has been taken as a fair estimate of its total possibilities.

In order to arrive at a figure that will approximate the total recovery for the whole field it

(*Continued on Page* 30)

The Editors' Viewpoint

A Challenge to Leadership in Our Industry

IN THE present oil situation we have the application of two chief remedies. The simonpure economist, who has long argued that price alone is the corrective of any unbalanced industrial situation now may take comfort in the thought that his remedy is being applied. Nor is the dosage homeopathic. It is what a veteranarian would call a drench.

The people who have contended for a balancing of supply with demand, through withdrawal of petroleum from the wells as needed, have had their method applied for several years and it is being given to the patient along with the price nostrum. He is being dosed internally and the ice packs are still kept on. Both the curative schools are at practice simultaneously on the same patient.

All that is left in the situation for the prorationists is the principle of ratable taking. It is testimonial to their sincerity that they are insisting as hard now on this plank of their platform as they were when proration seemed to be achieving a stability of price, described by a court in one of the opinions on the validity of Oklahoma's proration law as an incidental effect.

Those who have been in the front on the long battle for conservation maintain that one of the primary steps to be taken in establishing a definite conservation policy is the mitigation of the offset evil. They maintain that the recent opinion of the Oklahoma Supreme Court holding that oil in place is the property of all the operators in a single pool and that the state is within its rights in providing that one operator shall not win the oil of another is sound doctrine. Extension of this principle, contend these leaders, will go far to fix a policy of keeping oil in its natural reservoir until it is needed.

These discussions, however valuable they may be in really arriving at a policy for the future, mean little to the man who is at the moment wondering how long it will be before the sheriff takes charge of his assets.

The present price of crude oil will enable only the lowest cost production to come on the market. The thousands of wells yielding a fraction of a barrel per day—important though they be in terms of reserves for the future—cannot operate at 50 cents a barrel. The direct expense is greater than the returns. Nor is the trouble confined to the fractional-barrel wells. In many instances a 15 or 25-barrel well cannot operate on such prices. Thus, as the price has been lowered by successive postings over the past two years, the economic limit of a well, in terms of barrels per day, has been set at successively higher levels. Wells which make 25 barrels of low gravity oil and 200 or 300 barrels of water, in most cases, are now ready for abandonment if the present price level is to be maintained.

How about the continuance of this price? That question, rather than those centering around conservation, is uppermost in every oil man's thoughts.

Justified though purchasers may have been in making the reductions, by the cut prices prevailing in both the crude oil and the gasoline markets, the logic of the situation is that a better price should prevail long before this year is ended. When, one may ask, did logic have anything to do with the oil business? Then some must be introduced.

A price for a commodity that is unreasonably low cannot be sustained over a long period any more than can one which is outrageously high. The time is opportune for establishment of a program which will mean a fair return to the industry. The President of the United States himself has spoken on present conditions. While he has gone no further than to suggest a limitation of imports and proration in East Texas, no one can doubt that he is cognizant of the distress caused by the last price reduction.

It is a time for the assertion of reason. After all, it will require a billion barrels of oil to supply the country this year and that is a substantial asset. Some pet plans for expansion will have to be deferred. There will need to be a general willingness on the part of each operator—refiner, producer or marketer—to give up some of what he believes might be personal gain for the general good of his industry.

General business appears to be definitely getting better. The oil business can go along with the trend if there but be exercise, collectively, of common business sense. It is time for the leaders in our industry to turn its thought in that direction.

is deemed necessary to add to the present producing acres an extra 1000 acres as yet undrilled. There is nothing in the present condition of the pool to indicate that operators will put many wells down in this additional territory, though if it is not done soon it is not likely to be worth doing. Drilling holes to a depth of 6500 feet, and some will have to go below that, is too expensive unless an enormous flush can be reasonably expected.

By giving half the extra acres to the Wilcox and the other half to the lower Simpson, the possible total acreage for the pool is 8200. The ultimate recoveries for the various zones then are 20,800,000 barrels for the lime, 101,250,000 barrels for the lower Simpson and 144,000,000 barrels for the Wilcox, the total ultimate yield for the entire pool being 266,050,000 barrels.

This last figure is but little over half of what has been generally understood as the total potential for the pool. However, it is thought to be a fairly generous estimate considering the difficulties that are to be encountered when the flush is gone and expensive pumping and gas lift operations begin in this deep well territory.

A little different slant on this so-called menace to the industry can be obtained by carrying the calculations a bit further. The history of other pools of this type in the Mid-Continent area shows that under open flow conditions, from 60 to 75 per cent of the ultimate is produced during the first year. There is nothing about the Oklahoma City pool to indicate it is likely to be an exception, and the application of precedent to it brings out some interesting information. It is estimated that, if the pool were opened wide for the next year, the lime production would be out entirely—it is almost gone now—the lower Simpson would make 60 per cent of its ultimate, and the Wilcox would make 75 per cent of its estimated total yield. The result, after subtracting the oil already put in the tanks, would be a production of 150,000,000 barrels.

If the pool is allowed to produce for the next 365 days at its present full quota of 125,000 barrels per day it would produce a total of 45,625,000 barrels, or 30 per cent of the estimated total production for the year under wide open flow. At the present time it is claimed that the pool is producing but slightly over six per cent of its potential, though even doubling the above generous estimates would not bring so low a figure.

There is little doubt in the minds of men who have made careful studies of these two areas that they are greatly over-rated. That either could make a large quantity of oil for a short period is not denied, but the length of the period would indeed be short in the case of Oklahoma City. It is quite probable too that the East Texas operators are not particularly anxious to proceed where the returns are as lean as they appear to be in this new area. There is more threat in the known undrilled structures than there is in such producing pools as these.

New Well Adds to East Texas Possibilities

By Telegraph

HOUSTON, March 16.—Final completion of the Burton Drilling Co.'s No. 1 Florey test in the Peter Holmes survey, west of the Humble Oil & Refining Co.'s 1500 acres Crim block, southwest of Kilgore, Rusk county, disclosed greater producing possibilities for the Sabine uplift region of east Texas than hitherto considered probable.

The Burton well tested 400 barrels hourly at 3739 feet completion depth or 142 feet deeper than the Humble's nearest well on the Crim, more than a half mile east.

Producing wells of the Humble on the Crim and of other operators on offsetting leaseholds north and south are 60 feet or more down dip from the line where oil deposits pinch out against the old Comanchean Cretaceous shoreline of the Sabine uplift to the east. The uplift is known therefore, on the basis of geological data disclosed by the Burton well to produce more than 200 feet down dip with the certainty existing that the western edge of the field is at least another 50 feet down the slope of the structure.

Future drilling will have to show the width of the 30 mile long producing district which extends along the Sabine shore line from a point northwest of Longview in Gregg county to the Joiner area or northwestern Rusk county. Present drilling shows the district more than two miles wide with the possibility that it eventually will be found somewhere between three and five miles wide.

Railroad Right-of-Way Leases Granted

HOUSTON, March 12.—Railroad right-of-way drilling in the Gregg-Rusk district of East Texas will follow action of the International & Great Northern arm of the Missouri Pacific system in leasing 10 miles of ground alongside its tracks for development by the Texas Unity Petroleum Co.

The 10 miles of right-of-way is in the Kilgore district of Gregg and Rusk counties, southwest of Longview, extending from mileposts 64 to 74. Cash consideration was not disclosed but the Texas Unity is described as agreeing to pay 25 per cent royalty on oil produced and to begin drilling on a new well every 30 days.

It is authoritatively reported also that terms of the deal call for shipment of oil produced over the Missouri Pacific system, provided that the freight rate does not exceed more than nine cents a barrel more than the pipeline charge.

Oklahoma Chemists to Meet

TULSA, March 14.—The petroleum group of the Oklahoma section, American Chemical Society, will meet in Tulsa, March 21. Dinner will be held at the Alvin Hotel at 6 o'clock p. m. Following this two papers will be presented. Fred E. Frey, Phillips Petroleum Co., will talk on "Pyrolysis of the Paraffin Hydrocarbons" and H. M. Smith, Bureau of Mines station, Bartlesville, will discuss "Pyrolysis of Methane."

Mid-Continent Refiners Plan Research Program on Lubricating Oils

By Arch L. Foster

N. P. N. STAFF WRITER

EXCELSIOR SPRINGS, Mo., March 12

MEMBERS of the Western Petroleum Refiners Association studied the current ills of the refining and marketing branches of our industry at their annual meeting. They arrived at a number of conclusions regarding things which should be done to promote stability. They are:

Permitting demand for refined products to control rate of manufacture.

Evolving proper and adequate definitions of petroleum products offered for sale to the jobber particularly with reference to knock ratings of gasoline.

Developing equitable types of contracts for use by refiner and marketer.

Mid-Continent refiners have set a mark for the rest of the industry to shoot at, in curtailing their refinery runs so as to keep the stocks of gasoline within the forty million barrel estimate of the American Petroleum Institute. In the Mid-Continent area have refiners held stocks within this estimated maximum limit, the eastern and western divisions both having considerably exceeded their limits of gasoline in storage.

Probably the greatest difficulty the legitimate oil jobber has to face at present is the widespread evasion of gasoline taxes, by means of which bootlegging is promoted, and prices cut so low that the responsible dealer has little chance to survive, was the opinion of president L. R. Crawford given in addressing the association.

In view of the present unhealthy market condition and the ever-increasing demand for gasoline of high anti-detonation quality, the difficulty of moving U. S. Motor gasoline at a proper price is becoming increasingly pronounced, the president stated, and he recommended that some standard method for rating detonation quality be presented by the technical committee to the association for adoption and use.

The new gasoline pipelines will not dump gasoline at marketing centers along their routes to the disadvantage of local marketers, and to the detriment of the price structure in those localities, it was stated during discussion of this subject. The handling of these lines will be such as not to disturb the market or to react unfavorably on the industry.

Reinstatement of the Marketing Code by the Federal Trade Commission was urged by the refiners. The sense of the group of refinery executives after exhaustive discussion of every phase of the proposition was strong approval of the action of the A.P.I. in sending a committee of five to Washington to petition the commission to reinstate the code. A resolution approving and supporting the petition and arguments to be presented to the commission was passed by the refiners, although not as an association action.

IN THE face of the growing need for more complete and detailed data on gasoline production, the meeting decided that the association statistics should be reported hereafter in much greater detail than has been the custom in previous years. Statistics as to the amount of gasoline of regular and premium, or anti-knock, grades marketed will be segregated under separate divisions, by which a more complete working knowledge of the situation will be made available to members.

A large part of the confusion in the gasoline market has been due to inadequate and improper description of products, resulting in misunderstanding and vagueness as to the class of material bought and sold. A resolution was adopted by which a committee is to formulate comprehensive definitions of the different standard grades of gasoline for the guidance of marketers to eliminate confusion or abuses due to vague and insufficient specification.

The regrets of the association for the death of F. A. Pielsticker vice president in charge of refining for The Skelly Oil Co. were expressed in a resolution presented to the meeting. Mr. Pielsticker was past president of the association, and an ex-officio member of the board of directors.

THE technical committee of the association reported an ambitious program of research on the qualities and characteristics of Mid-Continent paraffin base lubricants and their application to specific types of lubrication problems. A program of testing lubricants in cold room experimental work has been instituted, a considerable amount of equipment has been purchased for this purpose, and the results of the research will be made available to the association from time to time.

H. W. Camp, W. P. R. A. representative on the Advisory Board to the Technical Committee on Lubricants and Liquid Fuels, Federal Specifications Board, reported the progress in developing a satis-

factory group of specifications for the use of the government in buying motor fuels stating that in all probability a new specification will be promulgated in the near future. Dr. E. R. Lederer, vice president of The Texas Pacific Coal and Oil Co. reported the results of work being carried out in conjunction with government organizations on lubricants, especially for aircraft use.

The technical papers presented during the manufacturer's committee meeting, Wednesday and Thursday, contain probably the best assembly of technical data that has ever been presented to the association. The new natural gasoline specifications and their use for the refiners advantage; new developments in grease manufacture, in knock testing, in automobile lubricants and the laws governing the action of lubricants in an automotive engine were discussed at length.

A. W. Burkett of the Jackson Engineering Corp. showed the newest developments in refinery gas recovery systems. F. C. Koch, of the Winkler-Koch Engineering Co. presented an interesting story of his experiences in Russia, and showed something of the stupendous efforts being made by the Soviet government to bring to a successful conclusion the five-year plan for the development of the manufacturing potentialities of the U. S. S. R. Several reels of films depicting various phases of the work going on, and the strides that have been made in that country were shown.

The application of the new natural gasoline specifications to the purposes of the gasoline blender was outlined in the most practical manner by S. S. Smith of the Shell Petroleum Corp., who has been very active in developing the new specifications. By a series of curves and charts, including a straight line graph, the speaker showed in principle, explained by specific examples, how the different grades may be applied by the blender to produce, with any definite blending stock, a motor fuel of practically any desired volatility and vapor pressure.

Refiners were shown how these two properties may be varied through a wide range by the proper and intelligent choice of one or more of the new grades; and how vapor pressure may be varied without appreciably changing volatility characteristics, or the converse, by proper selection of grades. This paper appeared in NATIONAL PETROLEUM NEWS, March 11, page 35.

H. C. Mougey, Chief Chemist of General Motors Research Corp., showed graphically the effect of oil viscosity on consumption in the automotive engine. According to his paper the best method of operating an engine is to use an oil of the lowest viscosity at low temperatures which will give the desired safety in lubrication, and to prevent the too great thinning of the oil beyond limits of safety at higher temperatures by the use of oil coolers, by which means a safe degree of viscosity is retained for operation, without the excessively high viscosities at low temperatures if a heavy oil is employed so as to have suitable viscosity at high operating temperatures.

The author was plied with questions by the refiners present as to the performance of different types of oils in service, especially regarding the effect of volatility on consumption, lubrication and other factors. The lighter, more volatile oil, according to the author will be retained in the crankcase a proper length of time by the use of a cooling system, and its lighter viscosity will greatly aid starting and initial operation before the engine has warmed up, easing the load on starter and battery, making for more satisfactory service from the automobile. This paper also appeared in the March 11 issue, page 32-D.

Dr. Earl Bartholomew stated that on account of the high cost of the standard knock test fuel components, normal heptane and iso-octane, which now cost about $25 per gallon, the Standard Oil Co. of New Jersey has prepared a supply of 35,000 barrels each of two secondary reference fuels, which may be standardized against the primary standards for routine use in laboratories.

W. P. R. A. Officers and Directors

OFFICERS and directors elected by the Western Petroleum Refiners Association at its annual meeting at Excelsior Springs, Mo. March 10-12:

PRESIDENT

L. R. Crawford	Pres. Producers & Refiners Corp.

VICE-PRESIDENTS

For Arkansas and Louisiana	
M. J. Grogan	Vice-Pres. Louisiana Oil Refg. Corp.
For Kansas and Oklahoma	
George D. Locke	Vice-Pres. Barnsdall Refineries, Inc.
For Texas	
E. H. Eddleman	Vice-Pres. American Refg. Properties

BOARD OF DIRECTORS

H. T. Ashton	Vice-Pres. Lubrite Refining Co.
C. M. Boggs	Pres. Kanotex Refining Co.
T. M. Martin	Vice-Pres. Lion Oil Refining Co.
Sheldon Clark	Vice-Pres. Sinclair Refining Co.
A. L. Derby	Pres. Derby Oil & Refining Corp.
T. T. Eason	Pres. Eason Oil Co.
John L. Gray	Vice-Pres. Deep Rock Oil Corp.
D. P. Hamilton	Pres. Root Refining Co.
C. L. Henderson	Vice-Pres. Vickers Petroleum Co.
R. R. Irwin	Pres. White Eagle Oil & Refg. Corp.
E. J. Marston	Pres. Texas Pacific Coal & Oil Co.
E. S. Karstedt	Vice-Pres. Continental Oil Co.
H. A. Trower	Vice-Pres. Phillips Petroleum Co.
P. F. Gwynn	Vice-Pres. Iowa Park Prod. & Refg. Co.
F. R. Schneider	Vice-Pres. Simms Oil Company
L. H. Prichard	Pres. Anderson-Prichard Oil Corp.
U. de B. Daly	Pres. Shell Petroleum Corp.
R. W. McDowell	Vice-Pres. Mid-Continent Pet. Corp.
H. J. Scott	Vice-Pres. Marathon Oil Co.

Oil Men Warned of Competition From Automobile Dealer

By E. L. Barringer

N. P. N. STAFF WRITER

DETROIT, March 13 AUTOMOBILE manufacturers are developing merchandising plans to capture lubrication business for their car dealers that, if known in our industry, would cause oil jobbers and station operators to stay awake nights.

This was announced to members of the Michigan Oil Men's Association in convention here today by R. J. McDowell, sales promotion manager, Vacuum Oil Co., Detroit office.

Plans could not be revealed Mr. McDowell said, but known efforts cited at the meeting follow:

A new auto has been driven 40,000 miles to test the difference in lubrication service.

For the first 20,000 miles the car was given ordinary lubrication care.

For the second 20,000 miles the car was lubricated according to factory recommendations.

Operating costs for the second 20,000 miles were 40 per cent less than for the first 20,000 miles on account of the regular lubrication service.

A model service station has been set up in the Highland park plant of the Ford Motor Car Co. with two hoists and modern equipment. Ford dealers are being shown the model station for fitting their garages to handle this service.

One manufacturer is having his dealers make a house-to-house canvass to unsell the car owner on having lubrication done at the corner filling station.

A Chevrolet dealer in Detroit has moved his lubrication lifts from the third floor of the garage to a prominent position out in front on the first floor.

What can the oil industry do against this form of competition?

Mr. McDowell answered the question in part in the formal part of his address.

"You probably heard this five years ago, and it sounds like the same old hookum," he said, "but if you had acted on it five years ago you would not be in the hole you are today.

"Know your products, have a merchandising program, and pass the information on to your men."

The audience of over 100 oil men was asked if they knew of a certain type shackle. Three men raised their hands.

"And yet 80 per cent of the automobiles, aside from Ford, are equipped with this shackle," Mr. McDowell said.

Michigan Officials

THE following officials of the Michigan Oil Men's Association were re-elected at the convention March 12:

President, H. H. Ragle, Jackson, ninth term.

Vice-presidents, A. J. Boergert, Central Oil & Gas Service, Saginaw; A. D. Dubuisson, Wolverine Service Stations, South Haven; Peter Jensen, Hansen & Jensen, Escanaba; C. E. Rennie, C. E. Rennie Oil Co., Traverse City; and J. F. Wilson, Star Oil Co., Port Huron.

Directors re-elected are C. A. Shierson, Cities Service Oil Co., Adrian, and S. B. Spalding, Arrow Oil Co., Lansing. J. G. Schindehette, Saginaw Oil Co., Saginaw, is a new director.

In an informal discussion after the meeting the oil man, especially the independent station operator, was credited with an advantage over the car dealer in having a more accessible place of business, and being better known in his community.

The car dealer also was said to have the same handicap as the oil man in developing employes to give intelligent, careful service. An advantage of the oil station is having its equipment out in front against the car dealer shoving the grease jobs into a back room.

One jobber suggested the oil industry might withdraw its patronage from the car manufacturer seeking the auto lubrication business for his dealers.

"What would we do for transportation," replied Mr. McDowell, "since all the auto makers are going after this business?"

Another suggestion was that the use of cheap oils and greases in new cars might be exposed.

Objection to this suggestion was that the automobile industry has provided the oil industry with the greatest market for our products, and an oil company would hesitate to take the lead in such a cause.

"The psychology of the new car buyer works against this suggestion," said Mr. McDowell. "It is common practice to have the new car greased, the oil changed, as soon as the buyer gets delivery so there would be little point in telling him about the original lubricants."

Business will be better in 1931 than it was in 1930 or 1929. said Mr. McDowell in opening his formal address,

but you will find competition keener and more intense than ever before.

Statistics were cited that 10 years ago there were 1100 cars for each service station against 77.8 cars per station today. There are five times more automobiles than bath tubs in Michigan yet in Detroit alone there are 3200 stations, and since the first of the year permits have been issued for about 400 more.

Competition for the car owner's dollar was cited also by the speaker. The furniture dealer, the railroads and every line of business are scrambling for the dollar. It is a question with a family whether to buy a radio or new tires for the car, and so on.

"The motorist knows little about the car he buys," said the speaker.

"Less than 1 per cent have read the instruction book. Yet that car represents probably his biggest investment, outside of his home and business. Would you oil men trust a station outside of your company to lubricate your car? Well then, why should anyone come to your stations?

"You cannot make a customer drive one mile farther, and you cannot make him burn any more gasoline.

"After you get a customer you forget to sell him. Here is a letter from the Cadillac Motor Car Co. to Howard A. Coffin, vice-president of the White Star Refining Co. It is the first time in ten years that Cadillac has asked Mr. Coffin for the job of lubricating his car.

"You don't see Cadillac hesitating now to ask Mr. Coffin, an oil company executive, to bring his car into a Cadillac dealer's place for service.

"The first requisite in filling station selling is cleanliness. Clean up your toilets. Get after the drives, windows, pump globes, and signs. Then get the attendant to clean up himself.

"After you get the station cleaned up don't sit down and read the newspaper. Grab the telephone book, call up your customers and ask them to buy."

A supply of new money is a requisite for retaining the woman customer's business, he said.

"Never lean into the car of a woman customer," said Mr. McDowell. "While at a station recently, as a bystander, I saw the attendant lean into the car to ask a woman what she wanted.

"After the sale the attendant came over to me and remarked, 'boy, you oughta seen what I saw.'

"That lady saw the attendant tell that to me. And that attendant will never get that customer in his station again."

The value of display should not be overlooked, he said. "You know how it is in Woolworth stores. You go in for some piece of goods and come out with an arm full. If Woolworth put his merchandise out of sight he would go broke in six months."

Mr. McDowell gave a report on a merchandising survey he made recently in Detroit, which was similar to those conducted by NATIONAL PETROLEUM NEWS.

The survey was made in 56 stations, and results showed the lack of merchandising ability.

"We tried the attendant's sales ability in selling batteries at five stations," he said.

"After making our purchase, and ready to leave, we ask the attendant to help us start the car telling him that 'the battery is about dead in this old can, so give us a push so we can get started.'

"And every one of those five attendants pushed us out of the station—just got behind the car and shoved a battery customer right out into the street."

"The other merchandising address on the "Better Business Conference" was by A. Douglas Jamieson, vice-president, Union Guardian Trust Co., Detroit.

The banks are in a key position for advising on marketing policies, he said. They know if money is being hoarded, how much and for how long, and the banks know when men with employment begin making withdrawals for purchases.

Oil men were warned against using charts and figures for past years in making plans and quotas. The merchandiser today must be alert to our fear complex, and to be ready when it is over. Alert to the trend is today's concept of business, he said.

The bank has become more than a money mart, said Mr. Jamieson. The bank is a big factor in business in bringing together the buyer and seller under the most favorable conditions.

The convention opened March 11 with a meeting on taxation. H. H. Ragle, president, opened the convention. Arthur J. Lacey, National Association of Real Estate Boards, Detroit, talked on "Costs of Government." On account of illness Frank E. Packard, general attorney, Standard Oil Co. of Indiana, was not present.

Phillips Files Gasoline Pipeline Tariff

By Telegraph

WASHINGTON, March 16.—The Phillips Pipe Line Co. today filed its first tariff with the Interstate Commerce Commission, issued March 12 and effective March 16. It is much like the great lakes pipeline tariff.

The basic rate is 70.5 cents a barrel on gasoline from Borger, Tex., to Wichita, Kans. The tariff provides for a refund of part of that rate if and when gasoline is shipped out of Wichita within 12 months. The refund is to be made to the basis of a rate of 28 cents a barrel from Borger to Wichita if the gasoline goes, even by truck, to Oklahoma and Kansas points.

When reshipped to points beyond those states the refund is to be to a basis ranging from 28 to 67 cents for the pipeline haul to Wichita. The refund to the basis of 28 cents for the pipeline haul is to be made on shipments from Wichita to such points as St. Paul, Duluth, Chicago, Milwaukee, Omaha, St. Louis, Lawrenceville, Ill., Robinson, Ill., Lockport, Ill., Cleveland, Pittsburgh, Bayway, N. J., Paulsboro, N. J., Brooklyn, N. Y., Buffalo, N. Y., etc.

The program for March 12 was on the code. In the morning H. A. Coffin, vice-president, White Star Refining Co., Detroit, presided at a Michigan state code committee meeting. Formal addresses were given on the code in the afternoon.

L. S. Wescoat, vice-president, Pure Oil Co., Chicago, spoke on "Pulling Together for Better Business."

Short talks on "Marketing Under the Code" were given by A. D. Dubuisson, Wolverine Service Stations, South Haven; James L. Ross, Midland Mutual Oil Co., Midland; J. J. Theisen, Theisen-Clemens Co., St. Joseph; J. F. Wilson, Star Oil Co., Port Huron; and Galen E. Wilson, Franklin Oil Co., Saginaw.

C. A. Shierson, vice-president, Cities Service Oil Co., of Michigan, Adrian, spoke on "On The Code Depends The Future."

The annual banquet was on the evening of March 12. Speakers were Burton F. Browne, state gasoline tax collector; Frank D. Fitzgerald, secretary of state; and C. M. Newcomb, humorist speaker.

McCormick is Marathon Sales Manager

TULSA, March 11.—J. V. McCormick of Tulsa has joined the Marathon Oil Co., subsidiary of the Ohio Oil Co., as tank car sales manager, effective March 1, according to an announcement by H. J. Scott, general manager of sales. Mr. McCormick will be located in the company's headquarters in Tulsa.

Prior to Mr. McCormick's connection with Marathon, he was manager of tank car sales for the Phillips Petroleum Co. at Bartlesville, going with that company when it acquired the Independent Oil & Gas Co. several months ago. Mr. McCormick had been sales manager for the Independent company for several years, and had become one of the best known men in the wholesale marketing division of the oil industry in the Mid-Continent, particularly with reference to merchandising of lubricating oils.

Trade Body Calls Hearing On Code's Abolition

WASHINGTON, March 16

GIVING way before the pressure brought upon it by the petroleum industry, the Federal Trade Commission has granted a hearing to the industry in Washington, March 31, on the trade body's abolition of all but three of the rules in the industry's code of trade practices.

The hearing is to be public. The precise problem is to persuade one member of the commission that there is nothing objectionable to the law in the trade practice rules. It is well understood that two of the five members of the body believe the rules are not in contravention of law or statute.

Therefore, the mathematical problem is to convince one more member that the rescinding of the abolition, which expires early in April, should be left to stand without date; or, better still, a complete reversal of the order of abolition should be entered.

"Any agreement among competitors that they will not use any specified lawful method of competition is a contract in restraint of trade," said Commissioner Humphrey, the member whose vote is believed to have turned the commission against the code adopted by the oil industry.

J. V. McCormick

But whether it was the vote of Humphrey or some other that threw the code of ethics into the dust bin, the task is the same, that of convincing one man that he construed the anti-trust law too narrowly.

Most men are inclined to attribute the return of the trade body to the old and narrow view of the anti-trust statutes to the influence of the attorney general, who, in turn, is believed to be more or less sensitive to the views of the so-called progressives in Congress. The latter are always crying out to the Department of Justice to "soak business" for no better excuse than that which makes the small mentality believe that the rich are the ones who pay the taxes.

Reapproval by the commission of the code was officially asked of the commission March 13.

W. R. Boyd, Jr., executive vice president of the American Petroleum Institute, New York, as member of a committee appointed at the national conference of marketers in Chicago, March 4, filed with the commission, at Washington, a petition requesting it to reconsider its action of Jan. 30, 1931, in withdrawing its approval of most of the 21 rules.

The commission was presented also with a stenographic record of the Chicago meeting, indicating practically unanimous opinion in favor of continuance of the code. The report indicated general support of the recommendations of the general committee of the institute's division of marketing and of the institute's directors that the commission be asked to rescind its order and that marketers adhere to their code obligations pending final action by the commission and the institute.

Gasoline Shipments Increase In Second Week of March

By Telegraph
March 17, 1931

SHIPMENTS of gasoline from refineries increased sharply in the second week of March. This fact is indicated clearly by the weekly refinery operations report gathered by the American Petroleum Institute.

Stocks of gasoline increased only 32,000 barrels during the week as compared with increases totaling two million barrels in the previous two weeks. At the same time refiners increased their runs of crude to stills 142,300 barrels daily average indicating that gasoline production for the week was far above the level of previous weeks.

The small increase in gasoline stocks was due entirely to operations of the Texas and California groups of refineries. In Texas gasoline stocks were reduced 384,000 barrels, mostly in the gulf coast region. In California gasoline stocks were reduced 385,000 barrels. All other groups reported increases.

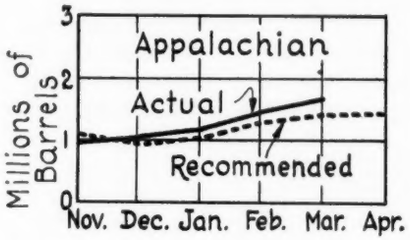
East Coast refiners continued to pile up stocks at a rapid rate. The increase for the week was 219,000 barrels bringing the total there to 8,399,000 barrels. The East Coast refiners increased crude runs 45,000 barrels during the week.

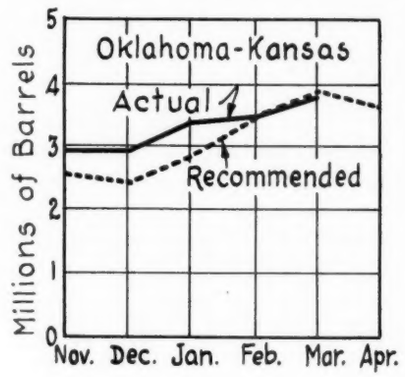
East Coast refiners utilized 81.2 per cent of their capacity. This was the highest of any group and compares with an average of 64.8 per cent for the country as a whole. Texas refiners were operating at 74.7 per cent of capacity and Texas Gulf Coast refiners at 80.5 per cent of capacity. California refiners were operating at only 51.7 per cent of capacity.

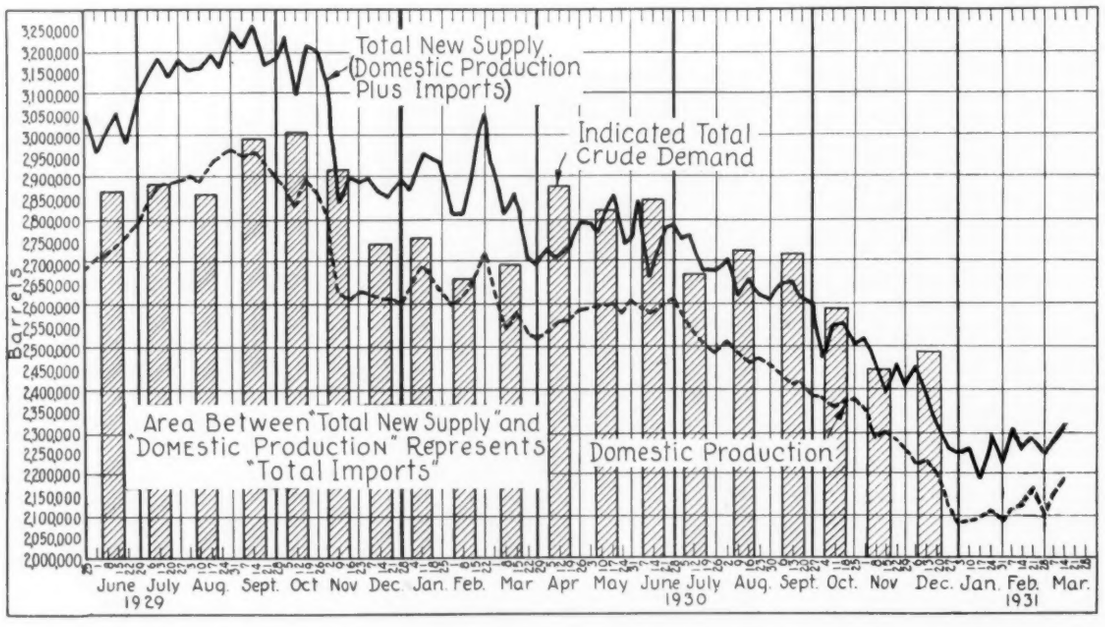
An accompanying series of small charts has been prepared to show how gasoline stocks held in various refining groups compare with the recommendations made last November by the statistical sub-committee of the American Petroleum Institute. The charts show the California and East Coast districts to hold the largest excesses with several groups showing stock levels below those recommended.

Domestic production of crude increased 34,000 barrels daily average during the week to 2,190,550 barrels. The increase was largely due to the 26,650-barrel increase in the Gregg-Rusk district of east Texas.

Imports of crude were largely unchanged at 128,000 barrels daily average. Total new supply of crude gained 35,565 barrels daily average to 2,319,000 barrels per day.

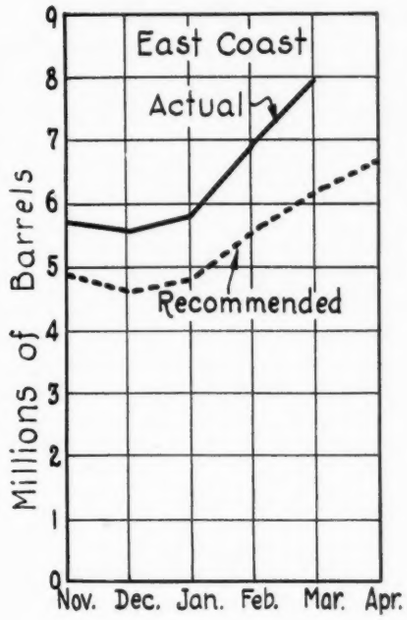


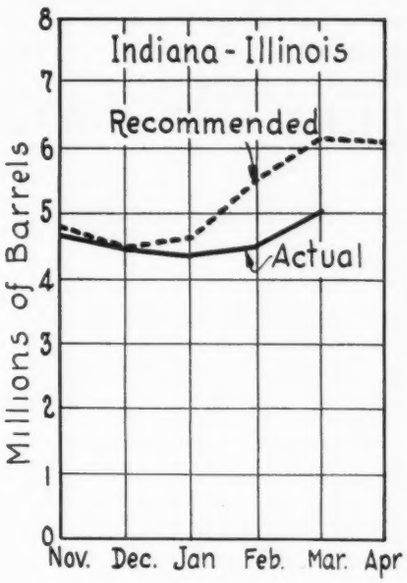


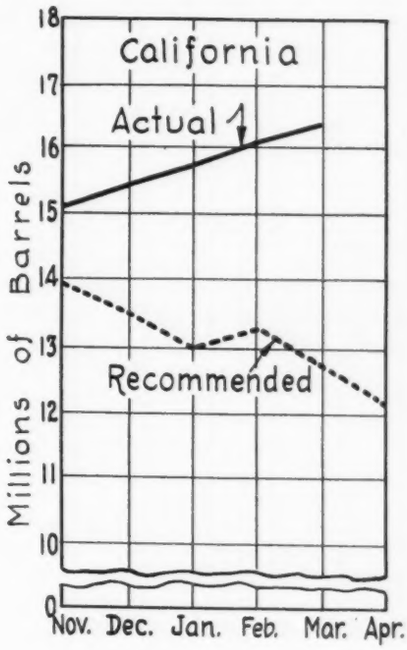


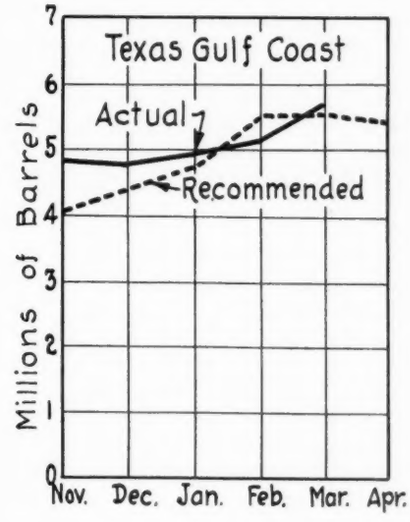
This chart shows crude oil supply from week according to the American Petroleum Institute reports (solid line) in relation to indicated crude oil demand as taken from the Bureau of Mines monthly reports (shaded columns).

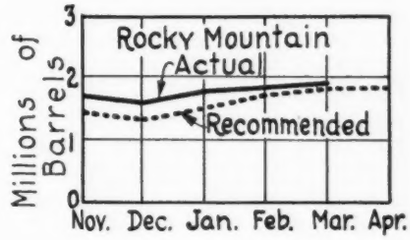
How Refining Districts Are Following A. P. I. Stock Recommendations

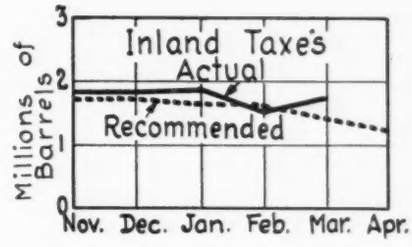


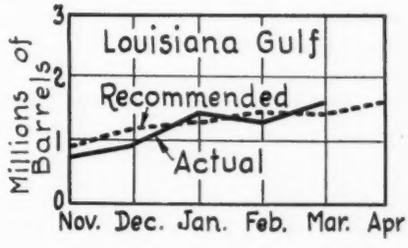


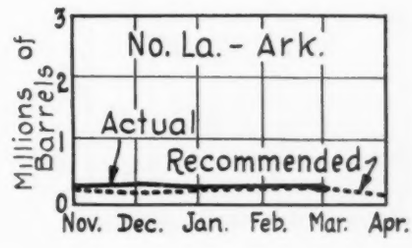












Current Refinery Operations

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills Week Ended (Barrels)		Per Cent of Reporting Capacity Operated Week Ended		Stocks (Thousands of Barrels) Gasoline		Gas & Fuel Oil		Cracked Gasoline Production % of Total Capacity Reporting	Daily Av. Production (Barrels) Week Ended	
		Mar. 14	Mar. 7	Mar. 14	Mar. 7	Mar. 14	Mar. 7	Mar. 14	Mar. 7	Mar. 14	Mar. 14	Mar. 7
East Coast	100.0	497,600	452,600	81.2	73.9	8,399	8,180	7,390	7,085	90.3	76,600	75,700
Appalachian	93.8	81,700	92,700	61.7	70.0	1,590	1,512	1,102	1,052	94.6	18,200	16,700
Ind., Ill., Ky.	97.5	287,400	270,600	75.4	71.0	5,421	5,169	3,039	3,057	91.8	65,400	67,400
Okla., Kans., Mo.	89.4	248,400	221,000	60.3	53.6	3,346	3,236	3,734	3,777	89.1	53,100	46,700
Texas	91.9	555,700	544,800	74.7	73.3	7,535	7,920	7,980	8,319	95.9	95,400	98,600
La., Ark.	98.3	140,700	139,700	53.7	53.3	2,029	1,907	2,319	2,363	98.6	36,600	29,900
Rocky Mountain	93.1	43,900	37,600	31.4	26.9	1,860	1,840	852	851	100.0	13,300	11,300
California	98.8	459,000	413,100	51.7	46.5	15,641	16,025	100,942	100,924	100.0	49,000	39,100
Total	95.7	2,314,400	2,172,100	64.8	60.8	45,821	45,789	127,358	127,428	94.2	407,600	385,400
Texas (Gulf Coast)	100.0	426,400	438,600	80.5	82.8	6,292	6,670	5,748	5,980	98.5	78,900	83,400
La. (Gulf Coast)	100.0	93,600	94,400	63.5	64.0	1,820	1,684	1,286	1,308	100.0	28,300	20,600

The Business Depression in Relation To the Oil Industry

By Clarel B. Mapes*

DESPITE the widespread evidences of an impending business depression that existed early in the year 1929, and although the severe reaction resulting from the stock market debacle in the late fall of that year became a serious deterrent to almost all lines of business, the petroleum industry was not immediately affected.

It was not until the late spring of 1930 that the recession in other business activities appeared to have a noticeable effect on the demand for petroleum products.

Since the advent of the automobile as a commercial machine, the demand for gasoline has consistently increased month by month, and the industry has fallen into the habit of expecting large increases each year. The only speculations or estimates necessary have been as to how large a percentage increase could be expected.

A decrease in demand over a past year has never been contemplated; and with this unusual and singular economic condition obtaining, it has always been the custom of the industry to pay more attention to the supply side of the economic picture. Thus it is that the business depression of 1930 presented an economic situation so distinctly different from the usual course of events in the petroleum industry.

The total demand for gasoline at refineries in 1930 was 455,730,000 barrels, of which 64,563,000 barrels were for export, and 391,167,000 barrels were domestic consumption. The total increases, as compared with the year 1929, were as follows:

Domestic consumption—18,699,000 barrels, or 5.02 per cent.

Export demand—3,298,000 barrels, or 5.38 per cent.

Total demand—21,997,000 barrels, or 5.07 per cent.

This total demand was supplied by a domestic production of 436,217,000 barrels, withdrawals from refinery storage totaling 2,716,000 barrels, and imports of 16,927,000 barrels.

Table No. 1 shows the pertinent data on gasoline demand and the yearly increases for the past 11 year period, and presents the comparative effects of the business depressions of 1921 and 1930.

In the early months of 1930, the demand for gasoline from refineries increased at an unusually high percentage rate, and the outlook for the year, on this basis, might have been viewed as highly satisfactory. But in the late spring, it became very evident that this unusually high demand of the early months of the year was a hysterical move and could not hold off the eventual consequences of a decreased purchasing power on the part of the retail consumers.

This rapid change in the aspect of the gasoline demand situation again brought to mind the happenings in 1921, which was the period of the last general business depression. In this year, the total increase in demand for gasoline was only 3.5 per cent.

The accompanying charts depict the effects of general economic conditions upon the yearly increases in gasoline demand, and the corresponding reactions of the year 1921 and 1930.

The depression of 1930 early had the earmarks of being much more serious and far-reaching than that of 1921, and the inactivity of automobile sales immediately indicated that the demand for automotive units would simply be that of a curtailed "replacement market." Thus the petroleum industry could hope only for a normal domestic gasoline demand from a well-defined number of retail consumers, any increase being moderate and with the tendency to disappear toward the end of the year.

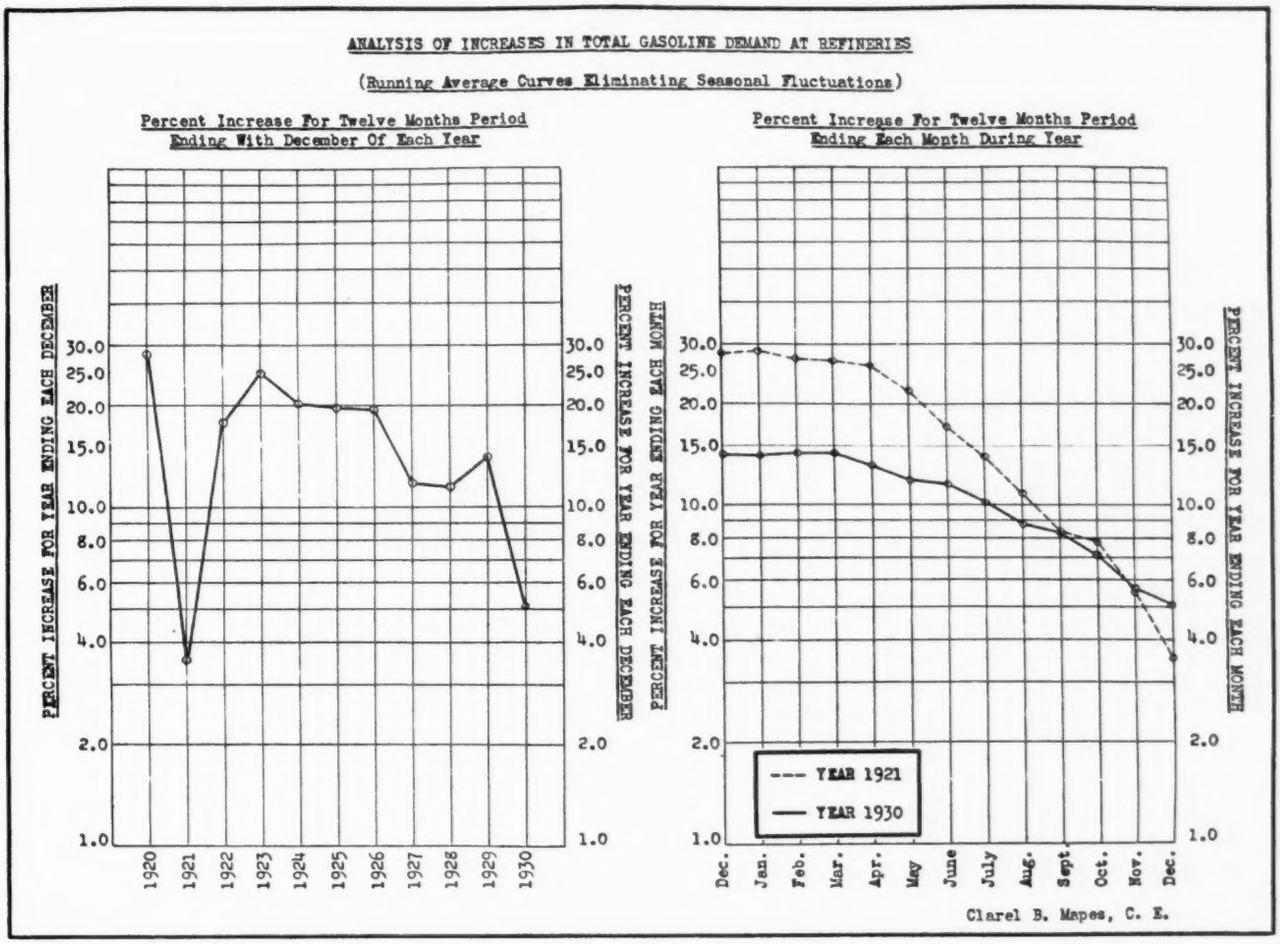
It was to be expected that the total gasoline demand would vary from that of domestic demand only insofar as the export trade varied from the normal expectancy. In the early

*Technologist, Mid-Continent Oil & Gas Association.

THAT the stability of the gasoline markets throughout 1931 depend upon the saneness with which individual refining companies govern their gasoline manufacturing program and avoid carrying surplus stocks was brought out in the accompanying article, published in the year book of the Mid-Continent Oil & Gas Association.

On one point, at least, the petroleum industry has reason to be decidedly optimistic, it is pointed out, namely, that present indications do not indicate a decline below total demand for gasoline during 1930. Extent of the increase in demand is estimated at from 3.5 per cent to 5 per cent. The report concludes:

"With this very probably condition ahead and the lowering of expensive and unwieldy stocks an accomplished fact, it only remains for refiners to individually produce gasoline to meet the demand as it develops."



parts of the year there was a decided variation, and, since the export demand for gasoline was unusually high, it served to help establish an over-optimistic feeling among refiners and jobbers.

After the first four months of the year, the export demand fluctuated quite radically, but the trend was distinctly downward. Toward the end of the year it began to appear that there was a distinct loss of foreign markets, although the majority of the decline could be attributed to the now world-wide economic depression.

Domestic consumption, even as early as August, fell below that of August, 1929; while it was not until October and November that the total demand for gasoline, including exports, fell below the total demand in the corresponding months of the preceding year.

In table No. 2 is presented, in detail, the relation of gasoline consumption in 1930 to that in 1929.

From this tabulation, it may be readily seen that there was a decided falling off in rates of increase in domestic demand as the spring months opened, and that, during the summer and early fall, there was virtually no increase over the demand of the previous year. This deviation from the normal increase in demand occurred during the vacation and heavy-traffic period of the year, and to some extent reflects the decreased purchasing power of the retail consumer.

Reports from the states usu-

Table No. 1

Demand for Gasoline in the United States

(Daily Average Barrels)

Year	Domestic Gasoline Consumption	Percent of Total Demand	Percent Increase Over Preceding Year	Gasoline Exports	Percent of Total Demand	Percent Increase Over Preceding Year	Total Gasoline Demand	Percent Increase Over Preceding Year
1920	276,525	86.62	+23.41	42,721	13.38	+71.41	319,246	+28.22
1921	294,589	89.11	+ 6.53	35,984	10.89	—15.77	330,573	+ 3.55
1922	350,427	90.04	+18.96	38,784	9.96	+ 7.78	389,211	+17.74
1923	429,441	88.31	+22.55	56,825	11.69	+46.52	486,266	+24.94
1924	505,473	86.46	+17.71	79,145	13.54	+39.28	584,617	+20.23
1925	613,329	87.67	+21.34	86,293	12.33	+ 9.03	699,622	+19.67
1926	717,296	85.80	+16.95	118,666	14.20	+37.52	835,962	+19.49
1927	813,170	87.00	+13.37	121,471	13.00	+ 2.36	934,641	+11.80
1928	897,511	86.13	+10.37	144,546	13.87	+19.00	1,042,057	+11.49
1929	1,020,460	85.87	+13.70	167,849	14.13	+16.01	1,188,310	+14.04
1930	1,071,690	85.83	+ 5.02	176,885	14.17	+ 5.38	1,248,575	+ 5.07

Table No. 2

Demand for Gasoline at Refineries During 1930

(Daily Average Barrels)

Month	Total Gasoline Demand	Percent Change Over 1929	Domestic Gasoline Demand	Percent Change Over 1929	Export Gasoline Demand	Percent Change Over 1929
January	989,226	+12.53	813,161	+11.53	176,065	+17.38
February	1,103,464	+16.09	930,607	+14.41	172,875	+26.11
March	1,178,968	+13.18	983,581	+10.90	195,387	+26.24
April	1,326,800	+ 8.61	1,135,767	+ 6.41	191,033	+23.81
May	1,321,742	+ 4.08	1,161,968	+ 5.58	159,774	— 5.64
June	1,419,033	+ 9.17	1,181,500	+ 6.88	237,533	+22.19
July	1,404,935	+ 1.52	1,224,355	+ 2.97	180,581	— 7.32
August	1,409,355	+ 0.68	1,199,613	— 1.51	209,742	+15.39
September	1,381,067	+ 7.28	1,246,767	+ 9.39	134,300	— 8.97
October	1,234,452	— 1.55	1,032,387	— 2.47	202,065	+ 3.49
November	1,145,733	— 3.44	1,022,733	— 2.60	123,000	— 9.87
December	1,063,065	+ 1.36	923,871	+ 7.87	139,194	—27.65
TOTAL YEAR	1,248,575	+ 5.07	1,071,690	+ 5.02	176,885	+ 5.38

ally visited by tourists during the summer vacation period substantiate the fact that there was a decided decrease in the consumption of "pleasure gasoline," and such was in all probability brought about by the decision, forced or otherwise, on the part of the average motorist, to forego lengthy automobile trips and be as economical as possible in the use of the automobile for pleasure purposes.

This condition may be expected to obtain in a greater degree during the year 1931, unless some unforeseen resumption of "prosperity" occurs. The average citizen, as well as the average commercial user of automobiles and trucks, will find it necessary to curb all expenses, and gasoline will be one of the principal items affected.

Opinions as to the probable demand for gasoline during 1931 vary to a considerable extent, but it is not expected that there will be an increase of more than 5 per cent over the year 1930, and the more conservative economists are making a preliminary estimate of 3.5 per cent increase.

It is apparent that there will be a tendency for domestic consumption to assume an even level or possibly decrease to a certain extent in the early months of the year, and there is no factor on the present economic horizon which would indicate a very large increase in total demand during the remainder of the year.

Weather conditions in the southern part of the United States have been ideal during the present low consumption period, and the northern tier of states have witnessed an open winter, with a comparatively small amount of snow. Yet, this very favorable factor has not seemed to increase the demand materially, and the general trend of economic conditions is still a powerful adverse factor.

There is, however, an optimistic side to the present trend in gasoline demand; and if we study conditions in other lines of industry, it may be seen that the petroleum industry might have reason to be decidedly optimistic.

Such a viewpoint is warranted because studies, based on past history together with the tendencies of the last few months, do not indicate a decline below the total demand for gasoline during 1930. And, while it is too early to make reliable estimates, yet it may be predicted with reasonable certainty that there will be an actual increase in demand, although such an increase is not expected to be large.

With this very probable condition ahead, and the lowering of expensive and unwieldy stocks an accomplished fact, it only remains for refiners individually to produce gasoline to meet the demand as it develops.

A continued sane manufacturing program will be the forerunner of more prosperous conditions throughout the entire petroleum industry.

Builds Aviation Beacon In Indianapolis

FINDLAY, O., March 13.—One of the largest aviation beacons in the country is being erected by the Lincoln Oil Refining Co., Robinson, Ill. on the Merchants Bank Bldg. in Indianapolis, according to H. B. Carpenter, president of the Lincoln company.

The beacon, 15 feet high, will be of solid Rainbow neon tubing. It will rise 375 feet above street level, higher than any other structure in Indianapolis. It will have a brilliance of 2,000,000 candlepower, will be visible from 60 to 75 miles and will flash red, white and blue. A lighted arrow will point in the direction of the municipal airport. Letters on the roof of the building will signify the distance to a passenger airport.

The Lincoln company is a subsidiary of the Ohio Oil Co. here.

Sells Michigan Refinery Output

CHICAGO—The output of the Old Dutch Refining Co., Muskegon, Mich., including distillate, gas and fuel oils, will be sold hereafter through the Hughes Oil Co. at 44 Rush St., Chicago. The Hughes company will continue handling all grades of petroleum products as it has in the past.

Railroads Plan Rate Cut to Meet Tank Truck Competition

TULSA, March 14

PROPOSALS to reduce materially the freight rates on gasoline and kerosine for short hauls from refining points, pipeline distributing centers and lake ports, in an effort to retain the tonnage which they have been losing to truck lines, has been announced by Western Trunk Lines and Southwestern railroads.

The Western Trunk Line Committee's notice was issued March 6 by Chairman E. B. Boyd, and allowed 12 days from that date for a filing of a request for a hearing. This notice was followed by a request by the Santa Fe for a similar hearing before the Southwestern Freight Bureau.

No dates had been set March 14 for these hearings, but it has been suggested in some quarters that a joint hearing would be feasible. It was generally understood among traffic men in Tulsa that similar proposals were contemplated by other rail groups, particularly in the Central Freight Association, but no notice had been received here.

The proposal before the Western Trunk Line Committee was given docket number 7554, and reads, in part, as follows:

"RATES—gasoline and kerosine in tank cars, usual minimum carload weights—from refining points, pipeline distributing depots, and lake ports, such as the following:

"Chicago, Wood River, E. St. Louis, Rock Island, Moline, Robinson, Lawrenceville, Joliet, Lockport, Lamot, Ill.; St. Louis, Kansas City, Mo.; Omaha, Neb.; Council Bluffs, Des Moines, Iowa City, Davenport, Ia.; Milwaukee, Green Bay, Superior, Wis.; Duluth, Minneapolis, St. Paul, Minn.; Coffeyville, Neodesha, Chanute, Augusta, Eldorado, Wichita, Arkansas City and Potwin, Kans.

"TO—Destinations within a radius of 75 miles.

"RATES—present—class or commodity. PROPOSED—Specific rates to be checked out on a scale as follows:

"25 miles and less, 5 cents per 100 lbs.; 26 miles to and including 50 miles, 7.5 cents per 100 lbs.; 51 miles to and including 75 miles, 11 cents per 100 lbs. Rates to be readjusted beyond 75 miles, grading into the existing rates as rapidly as possible."

Western Trunk Line rates are mostly on a point-to-point basis, as ordered in the Mid-Continent Rates Case of 1925, and traffic men here had not worked out what reductions the proposal would amount to, but it has been estimated that in the case of the Southwestern lines, the proposal would mean a reduction ranging from 7 to 7.5 cents per 100 pounds, or 39 to 58 per cent, based on the rates ordered in the recent decision of the Interstate Commerce Commission in Docket No. 17,000, Part 4-A.

The accompanying table gives the rates ordered by the I. C. C. and those proposed for comparable distances, both in cents per 100 pounds, and in cents per gallon. The I. C. C. rates are listed under "present rates," although they have not as yet become effective.

The proposal of the railroads shows clearly that the executives have recognized the menace to their tonnage of the large tank trucks and trailers which have grown in use the past few years for distribution of gasoline from terminals of oil companies to bulk plants within a radius of 75 to 100 miles, just as they have recognized the competition of trucks for distribution of automobiles and for distribution of "local freight." Lower rates have been established, it was understood, for shipment of automobiles for short distances, and several roads were understood to have experimented with door-to-door freight delivery sufficiently to have reached a decision to publish freight rates on that basis.

The action by the Western Trunk Lines probably grew out of a recent meeting in Chicago of railroad executives to which several traffic men for oil companies were invited. It was decided at that time that 75 miles was about the maximum mileage for efficient operation of a large truck unit.

The railroads, of course, can do little with reference to rates in competition with gasoline pipelines now that the lines have been put into operation. If short haul rates are made low enough the carriers may discourage the use of trucks in short-haul deliveries from pipeline unloading points. It will be observed that the terminals of both the Great Lakes Pipe Line Co., and the Phillips Petroleum Co. have been included in the list of points from which the proposed rates would be applied.

Many oil companies within the past two or three years have established their own trucking units at many large distributing centers, as well as from their refineries to their bulk plants located within a radius of 75 to 150 miles. Other companies have contracted with trucking companies.

Oil companies having an interest in the Great Lakes line have planned to distribute their gasolines by trucks as far as possible from the terminals. Phillips Petroleum Co. has for some time operated a truck fleet, and was understood to have made plans similar to those of other companies with reference to distribution from pipeline terminals.

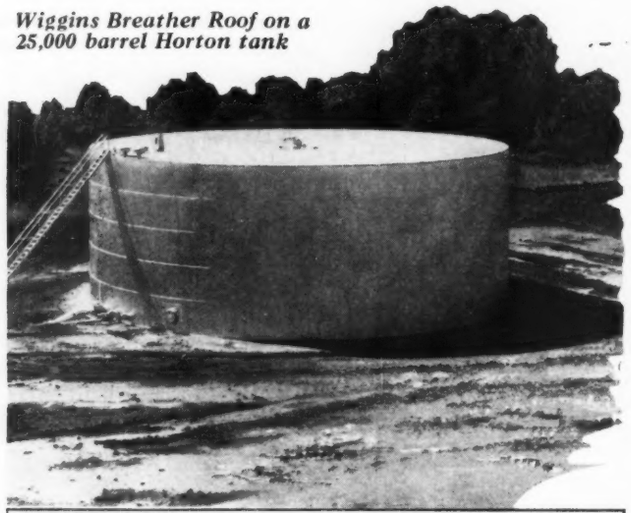
Difference in Present and Proposed Rates for Short Hauls by Railroads

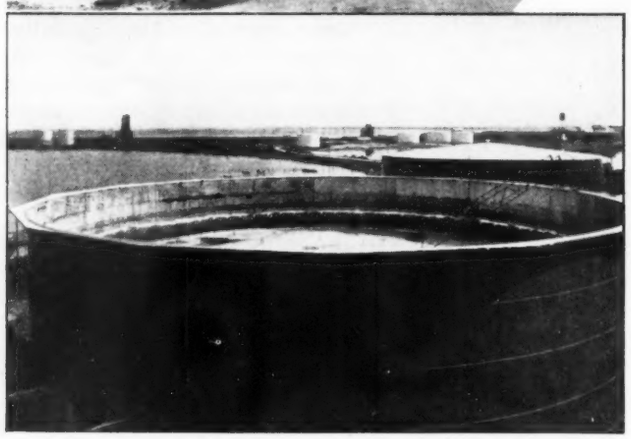
	PRESENT*			PROPOSED			DIFFERENCE
	c per Cwt.	c per Gal.	Approx. Frt. per tank car (8000 gal.)	c per Cwt.	c per Gal.	Approx. Frt. per tank car (8000 gal.)	
To 25 miles	$0.12	$0.0079	$63.20	$0.05	$0.0033	$26.40	$36.80
25 to 50 miles	.15	.0099	79.20	.075	.00495	39.60	39.60
50 to 75 miles	.18	.0119	95.20	.11	.0073	58.40	56.80

*Rates prescribed by I. C. C. in Docket 17000 Part 4A, but not yet in effect.

The marketer with ample storage under Wiggins Roofs has the advantage...

Wiggins Breather Roof on a 25,000 barrel Horton tank





Wiggins Floating Roof on a gasoline storage tank

THE marketer with ample storage capacity in Horton tanks equipped with Wiggins Roofs has a double advantage over less far-sighted competitors.

He can purchase stocks when the market is favorable and hold them for Summer consumption. For this purpose, we build field erected tanks at any location from 25,000 gallons capacity up, and cylindrical tanks in both welded and riveted types, for shipment from our Birmingham plant.

He can protect his oil from evaporation losses and reduction of gravity by having his field erected tanks equipped with Wiggins Roofs. The saving here is sufficient to repay the cost of the roof in a few months. In addition, fire hazard is minimized and tanks can be placed closer together in congested districts.

Complementing Wiggins Roofs, the Hortonsphere and Hortonspheroid are used to store highly volatile products under pressure, so as to reduce evaporation loss.

We will be glad to give quotations on pressure containers, Horton tanks equipped with Wiggins Roofs, and on Roofs for existing tanks. Address our nearest office.

CHICAGO BRIDGE & IRON WORKS

Cleveland	2206 Midland Bank Bldg.
Houston	1118 Electric Bldg.
Tulsa	2407 Exchange Bank Bldg.
New York	3145 Hudson Terminal Bldg.
Philadelphia	2614-1616 Walnut St. Bldg.
Boston	1516 Consolidated Gas Bldg.
Chicago	2125 Old Colony Bldg.
Detroit	1513 Lafayette Bldg.
Birmingham	1534 Fiftieth St., N.
Dallas	3339 Magnolia Bldg.
San Francisco	1060 Rialto Bldg.
Seattle	4324 Smith Tower
Havana, Cuba	Apartado 2507

Group of Horton station tanks

STOP FIRE AND EVAPORATION LOSSES

WIGGINS ROOFS

NPN 3-18 Gray

Governor Attacks State Commission's Dalliance With East Texas

By Paul Wagner
N. P. N. STAFF WRITER

HOUSTON, March 14 GOVERNOR STERLING cracked down on the Railroad Commission of Texas, March 13, for its "hands off" policy on the new Gregg-Rusk oil district of East Texas as far as attempts to enforce proration are concerned.

Confirming that he had drafted a bill to take regulation of oil and gas production away from the commission, Governor Sterling said that present Texas conservation laws are adequate and "the railroad commission either cannot enforce them because they have too many other duties, or they will not."

Coincident with the governnor's statement, dispatches from Washington credited President Hoover with saying that regulation of imports "would have little effect, unless the East Texas pool shall be prorated on the same basis as other new pools."

The Railroad Commission of Texas, in its capacity as the state's conservation agency, has set March 24 as the date for the statewide meeting that precedes the next official prorating period, beginning April 1.

At that time the subject of Gregg-Rusk proration will come before the commission in conjunction with continuance of the curtailment in effect since last fall in other districts of Texas. A move for a separate hearing on the East Texas area has been blocked by anti-prorationists headed by Carl Estes, of Tyler, who said it would take the National Guard and Texas Rangers to enforce a curb on the district before April 1.

Formal call to include the East Texas fields under statewide proration is expected to bring the subject to a head definitely. Commissioner Lon A. Smith announced, in issuing the call, "if proration is ordered it will be enforced."

When shown dispatches from Austin quoting Commissioner Smith, Estes, as secretary of the East Texas Lease, Royalty & Producers Association, issued the following:

"This is not the fight of East Texas. It is the battle of all Texas. Texas has prorated for the last two years, but there has been no curtailment in importation of foreign crude oils and gasoline. During 1930, 62,129,000 barrels of crude oil and 16,927,000 barrels of gasoline were imported into the United States, the total being equivalent to 350,000 barrels of crude per day.

"East Texas will willingly take up the battle of all Texas. It will gladly prorate its production proportionately with importation, no more and no less."

A day before, Estes declared foreign imports on oil must be reduced before the majority of East Texas operators will agree to submit to proration. He announced then that Wirt Franklin, president of the Independent Oil Producers Association of America, would address a meeting of independents at Tyler, March 17.

ESTES was quoted as telling Franklin over long distance telephone that "we have adopted a slogan 'United we stick and divided we are stuck'; and that goes for all Texas, as well as other oil producing states in the United States, and we'll never accept this monopolistic scheme until those in foreign countries do first."

Governor Sterling's criticism of the railroad commission's failure to act on East Texas proration in the period of several weeks in which the Estes group has openly defied action thereon was accompanied by the statement that March crude price reductions reflected the unrestricted flow of wells in the Gregg-Rusk district.

THE high production mark of the past in the Gregg-Rusk district, all handled in tank car shipments of crude, was attained March 11, when the daily yield was 93,817 barrels from 50-odd wells. March 13, exploitation totalled 83,444 barrels, the production varying from day to day but maintaining a generally upward trend over weekly periods.

Governor Sterling's proposed new commission, which would be appointive, contemplates a group stripped of such politics as now surround elective members of state boards. The new commission would consist of three members at salaries of $7500 each.

Various legislative groups have been sounded out this week by the governor, who is credited with feeling the petroleum industry has reached such a plight that something heroic must be done. Exact plans have not been revealed, beyond the proposed new commission, which would leave the present utilities board to deal with such activities as fixing of railroad freight rates, rates and regulations for motor transportation and other duties.

It became apparent as the week ended that Governor Sterling's bill would develop

opposition. Chairman Hardy, of the house Oil, Gas and Mining committee, from Breckenridge, was not inclined to offer it. Hardy is against proration to begin with and he also favors an elective commission. Representative Lasseter, of Henderson, who is regarded as an East Texas key figure in legislation, also opposes the governor's measure.

East Texas anti-prorationists, meeting at Henderson, March 13, adopted a resolution seeking to ward off proration another 30 days, "until the district can be developed and its capacity proved."

Another resolution adopted at Henderson asserted: "It is the opinion of this body that the central proration committee of Texas, of which Robert R. Penn is chairman not be permitted by the railroad commission to make recommendations relative to any character of proration in the East Texas oil fields if and whenever proration becomes necessary."

The resolution explained: "We feel that, in view of some of the acts and utterances of that committee, they have disqualified themselves to occupy advisory positions with relation to the East Texas fields."

March 14, in Dallas, Chairman Penn was told over long distance telephone by President E. B. Reeser, of the American Petroleum Institute, that proration is due to be abandoned in Oklahoma April 1, unless something is done in East Texas. Mr. Reeser was quoted as saying a vote to that effect had already been taken by the Oklahoma committee.

Mr. Penn then said: "The next 15 days are going to tell the story as to the outcome of the present oil crisis.

"In spite of all the work done by the American Petroleum Institute, the Mid-Continent Oil & Gas Association, and the various conservation authorities and committees of Texas, Oklahoma, California, New Mexico and Kansas, the last and vital decision remains to be made and on that decision the outcome will depend.

"There are some who charge that proration has failed because the price structure has not been maintained. I myself feel it is most regrettable that the price structure has failed, but conditions would have been infinitely worse by this time had we not had proration.

"In fact the principal reason the price structure has failed so signally is that certain areas such as the Texas Panhandle, the Wichita Falls district, and now the new East Texas area, have not fully lived up to the spirit and purpose of proration. There have been increasing quantities of oil going to the market at cut prices from all these districts and this bootlegging of oil is the secret of the breakdown of the price structure.

"Low as are the present prices of crude oil, they can go yet lower within the next few weeks unless proration is instituted in East Texas and rigorously enforced in all the fields of Texas and Oklahoma. I personally would not be surprised to see oil prices break to 10 cents per barrel or even less if the producers of the United States generally do not heed the present situation and put their house in order."

Carl Estes was busy at Tyler issuing another statement which included the information that T. D. Bowlen, representing the Wainwright West Co., of Toronto, had contracted for 1,000,000 barrels of crude to be shipped from Rusk County to Canada, where it could be laid down at $1.25 a barrel. British American Oil Co. had previously contracted 1,000,000 barrels under similar conditions. Said Estes: "Now it appears that they are out to stop us from exporting while they enjoy the profits from foreign importations."

At Austin, state capital, members of the railroad commission were busy defending themselves from the attack of Governor Sterling, which they described as unfounded and unwarranted. A statement signed by Commissioner C. V. Terrell, and Lon Smith, and by Chief Supervisor R. D. Parker, of the Oil and Gas division, said: "It seems the governor does not know that this commission, in enacting conservation regulations, has no power to regulate the price of crude oil. This commission, in its proration policy, has heretofore and will hereafter be governed by the law as the legislature has enacted it and the law is simply that such regulations shall be enacted as will conserve petroleum as a natural resource, that is, prevent the waste thereof, so the public may derive the benefit of the greatest ultimate recovery."

The statement said it seemed President Hoover "would like to shift the responsibility upon the railroad commission of Texas for his own dereliction in failing to use his influence to stop this importation of foreign oil which has caused the decline in the price of crude."

Governor Proposes New Oil Commission

By Telegraph

HOUSTON, March 16.—An emergency measure which would create a separate oil and gas commission and take administration of the states conservation laws out of the hands of the railroad commission of Texas was submitted to the legislature March 16, accompanied by a message from Governor Ross S. Sterling.

The governor's message came as a climax to his criticisms of the railroad commission's failure to initiate proration in the Gregg-Rusk district of East Texas over the protests of antiprorationists who have defied state action for several weeks.

Senators Woodall of Houston and Woodward of Coleman offered the administration conservation bill in the senate which referred it to the state affairs committee which is due to meet March 18. No action was taken in the House when the Governor's message was read.

In his submitted message Governor Sterling told the legislature that "Irreparable economic disaster and loss of many millions of dollars to the public school fund and general revenue" can be averted only through prompt action on its part in establishing the commission.

Washington Thinks Domestic Control More Important Than Imports

WASHINGTON, March 16

ALTHOUGH official Washington is carrying on its negotiations to effect a reduction in oil imports there is a distinct attitude here that control of domestic output is more vital than reducing present 292,000-barrel daily average of imports.

Secretary Wilbur said, on March 13, that all the big importers subscribed to the proposition that imports should be curtailed. He said that all except the Standard of Indiana were agreed upon what could and should be done. The Standard of Indiana, he said, was willing to go part of the way but not all the distance deemed necessary.

Later on that day President Hoover put out a statement in answer to the hundreds of telegrams he had received from the west and southwest either inquiring or making suggestions as to the situation in the oil industry. It was a mere review. It contributed no fact not heretofore known.

Neither the President nor Secretary Wilbur indicated what had been agreed upon as the amount of the curtailment. The latter said the amount would be several millions of barrels annually. That might mean three millions or it might mean five or six times as much as that.

A bracket guess made by some who thought they had an idea as to what would be equitable was between 11,000,000 and 17,000,000 barrels annually. The President, in his statement, treated the imports of crude and its products as being approximately 105,000,000 barrels. That is about 6,000,000 barrels less than is used by those who convert the refined products into their equivalent in barrels of crude.

The Standard of Indiana was represented as holding back for a smaller restriction than taken as equitable. It was represented as holding back on account of obligations supposed to rest upon it by reason of the terms of its concessions whereby it obtains petroleum in South America.

The obligations were not regarded by official Washington as amounting to an insuperable obstacle if the Indiana company really desires to join the procession of self-denying importers and keeping step with its colleagues.

The fundamental question, as official Washington saw the matter, was as to the equities of the case. It was pointed out that imports, for a decade, had constituted a practically constant factor. The disproportion, it was asserted, was caused, not by any large increase in imports or decrease in exports, but by the increase in domestic production, with the east Texas field with flush production injected into the situation at the worst possible time.

FITTING that production into the scheme of things was regarded as the hard part of the matter, with the Texas Railroad Commission as the first agency having to deal with the addition to the national problem. Among the suggestions was that if the oil producing states, meaning Texas and Oklahoma in particular, could not cope with the matter of production within their own borders, the relief to be obtained from restrictions of imports would hardly be worth noting.

Official Washington, following the Wilbur idea of a cure, was pleased to note that the governors of Texas and Oklahoma were bestirring themselves in an effort to co-ordinate the acts of those states. Naturally their activities suggested the Wilbur compact idea. The thought was that if the oil producing states had made agreements with each other two years ago when the compact suggestion was made, they would now be in a better situation created by the added menace of new production in the Oklahoma City and east Texas fields.

AFTER reviewing the work the government had done in Kettleman Hills and other factors in the domestic situation and giving U. S. imports and consumption the Hoover statement continued as follows:

"On Jan. 29 the Oil Conservation Board recommended to Congress that authority be given to the Federal Trade Commission to effect proration of imports, it being the Board's hope that a proration of production in the foreign pools exporting to the United States could be brought about as well as a proration of imports into the United States. No action was taken by Congress upon this recommendation nor upon other plans proposed by the independent oil producers.

On March 5, therefore, the board, with my approval, requested that importers should each voluntarily prorate their production from foreign pools and their imports into the United States, in order to give Mid-Continent and California fields an opportunity to further readjust their position.

"The board considers that in the present situation a substantial reduction in imports can be brought about without disturbing the price of oil to the consumer, the Atlantic Seaboard can be supplied from domestic storage. These negotiations are making favorable progress.

"But such action would have little effect, however, unless the East Texas pool shall be prorated on the same basis as other new pools. It is believed that if these two results could be brought about, the industry will soon readjust itself."

8500-Foot Big Lake Well Again Under Control After Blowout

By Paul Wagner

N. P. N. STAFF WRITER

HOUSTON, March 13

THE ninth and latest of the world's deepest oil wells—the B-4 University of the Texon-Group One Companies (Continental Oil Co.), in the Big Lake field of West Texas—stopped all operations within a radius of several locations when it began "running wild" March 11.

It was controlled two days later while flowing 175 barrels hourly or at the rate of 4200 barrels per day through the tubing, the 7-inch casing and between the 7 and 9-inch casings. Virtually all production was diverted to lease storage while the well was out of control thereby avoiding oil loss.

Reports from San Angelo said the blowout occurred when pressures on tubing and casing were increased at 2100 pounds in efforts under way to reduce gas/oil ratios. A defective fitting is believed to have given way.

Pressure on tubing had been previously as high as 1900 pounds, but on the casing only 900 pounds.

The well had been exploited at 2400 barrels daily through tubing in the 24 hours preceding the blowout. The previous day's gauge had been 3575 barrels. Its maximum early in February, was 8686 barrels of oil and 66,000,000 cubic feet of gas daily at completion depth of 8587 feet. The well was completed Jan. 14, 1931, as the ninth of the Big Lake group producing at depth of 8200-8900 feet in the Ordovician beds.

Wells producing from the 5400 and 6450-foot horizons at Refugio, in the Corpus Christi district of South Texas, have been placed on uniform quarter-inch chokers in effort to conserve gas pressure in the field. Action was taken after a conference of operators, which was followed by a conservation order of the railroad commission.

It was brought out at the operating conference that approximately 200,000,000 cubic feet of gas daily was being produced with the oil and well owners were frank in their statements that the gas/oil ratios maintained had been too high.

The Refugio district, which produces the bulk of its oil from shallower horizons at 3000-3500 feet, is now yielding a total of approximately 33,000 barrels, light gravity cracking stock crude, daily.

Further reductions are recorded in pipeline runs from the Permian salt basin region of West Texas and southeastern New Mexico, where the daily total now is below 275,000 barrels. Tank car shipments which include 300 barrels from the Big Lake field of Reagan county and 13,000 barrels from Southern Crude Oil Purchasing Co.'s Winkler properties, total approximately 16,000 barrels daily.

RUNS to West Texas refineries aggregate more than 19,000 barrels daily, with 6000 barrels accredited to the Col-Tex Refining Co., Colorado City; 4000 barrels to Burford Oil Co., Pecos City; and 7000 barrels to Cosden Oil Co., Inc., at Big Spring. Other plants operating are Big Spring Refining Co., 1300 barrels; Great Western Refining Co., Big Spring, 1500 barrels; and Wickett Refining Co., 325 barrels. Humble Oil & Refining Co., at McCamey, and Tonkawa Refining Co., at Pyote, made no runs.

Distribution of crude, totalling approximately 310,000 barrels daily in the Permian salt basin region, exceeded production by nearly 40,000 barrels daily, indicating withdrawals from storage. Included in the production totals were 35,200 barrels daily production in Lea county, New Mexico, of which approximately 31,000 barrels comes from the prorated Hobbs field.

Proration statistics give Hobbs daily potential production of 1,122,963 barrels from 142 completed wells; the Yates field of Pecos county, West Texas, 5,508,170 barrels from 401 wells; and the Texas Panhandle 141,775 barrels from 1977 wells.

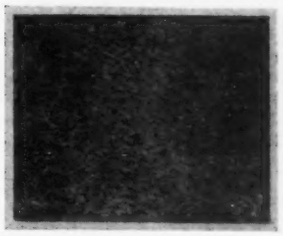
AS against the Hobbs proration allowable of 31,328 barrels daily, the Yates field is limited to 89,500 barrels and the Texas Panhandle to 39,990 barrels.

In Crane-Upton counties, the potential of 49,034 barrels from 600 wells compares with 18,658 barrels allowable. Howard-Glasscock counties, with 531 wells, are credited with 77,965 barrels potential against 20,925 barrels allowable. Ector county, with 79 wells, has 25,762 barrels potential and 6115 barrels allowable. Winkler county, with 113,615 barrels potential accredited to its 534 wells, is allowed 60,000 barrels daily.

In the general Ranger territory of the Central Mineral Belt, all wells are limited to marginal allowances of four, eight and 14 barrels daily, according to depth, the approximately 9000 wells being allowed 26,430 barrels daily as compared with 47,332 barrels potential.

When gauged in January for prorating purposes the 14,914 wells in the Greater Wichita Falls district showed 97,794 barrels potential against pres-

What! THESE TWO PANELS WORTH THOUSANDS OF DOLLARS!

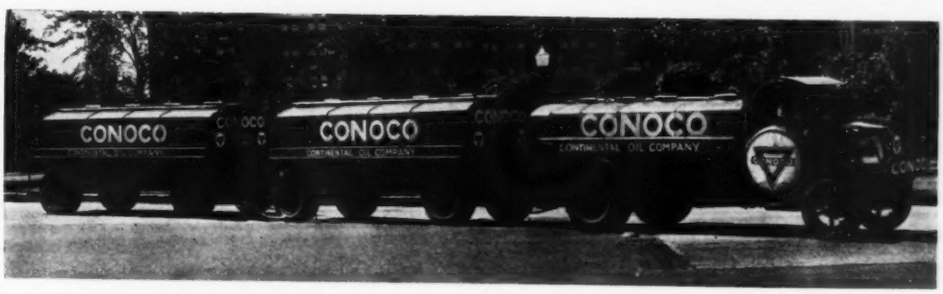


Metal Protective Paint Vehicle —This shows what happens to a film after only 7 month's exposure 45° south.

Dulux Vehicle after 19 months' exposure. More than 175% longer life! A 45°, southern exposure, is doubly severe. Each of the steel panels received only a single coat of clear vehicle without rust-inhibitive pigment.

Note the Dulux Finish expected to make obsolete the oil and varnish types of finishes now used on oil equipment. Write for technical bulletin on latest du Pont chemical development.

THE metal panels themselves are not so valuable. But the story told by the finishes on these panels is worth a lot of money to oil companies. Some companies are already proving it.



Linking low distribution costs to lower maintenance costs. The Continental Oil Company profits also by the improved appearance of this prize truck and trailer train in red and white Dulux.

On one panel you see a high grade metal protective paint of the type now used extensively. On the other you see du Pont Dulux, a new type of coating for oil property and equipment. And Dulux replaces all known protective and decorative coatings in the oil industry today.

Here are some reasons why Dulux should be worth so much to any company. Read them and then ask us to send you more complete technical data regarding this truly remarkable chemical development.

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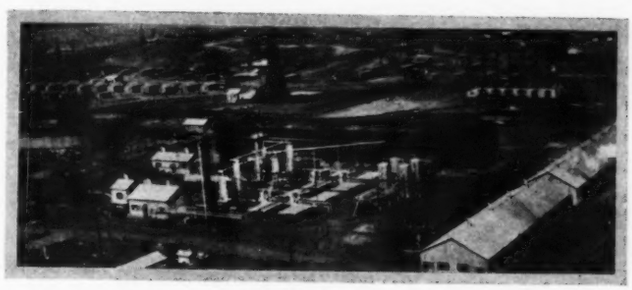

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ent allowable production under proration of 56,714 barrels.

In the Van field of central East Texas, where allowable production now approximates 35,000 barrels daily from the unit development of the Pure Oil Co., and others, the 212 wells are tested for prorating potentials under 11/16ths inch chokers. Tested on that basis the rated potential is 418,358 barrels. Under open flow conditions it has been estimated the potential would exceed 3,000,000 barrels.

Southwest Texas, including Salt Flat, Darst Creek and Pettus townsite, accounts for 602 prorated wells with 176,073 barrels potential and 50,500 barrels allowable. The bulk of the potential and actual production in the combined area comes from Darst Creek with 152,201 barrels potential and 30,000 barrels allowable.

The Gregg-Rusk district of East Texas, which has never been prorated to date, is capable of making at least 200,000 to 300,000 barrels open flow production from its more than 50 completed wells; and March 11 it made a new high production mark of the past at 93,817 barrels actually exploited.

Gregg-Rusk production was distributed as between localized areas as follows: Joiner, or south end development, Rusk county, 51,192 barrels; Kilgore area, nine miles north of Joiner, 32,797 barrels; Lathrop or Longview area, in Gregg county, 18 miles north of Kilgore, 9828 barrels.

Yount-Lee Interests Acquire Proved Block at Longview

HOUSTON, March 14

PURCHASE by the Yount-Lee Oil Co., of Beaumont, of the Farrell-Moncrief properties in the Lathrop discovery area, northwest of Longview, Gregg county, was the week's outstanding development in the new East Texas district. Consideration was announced as $3,270,000, including $1,270,000 cash and $2,000,000 out of one-quarter of the first oil produced.

Affected in the deal, which had been previously reported[1] but not concluded until March 13, was the full working interest in 2408 acres adjacent to the discovery well, and a half interest in the 92-acre tract on which it was drilled. Arkansas Fuel Oil Co., of the Cities Service group, owns the other half of the discovery well working interest.

Latest reports show the Lathrop well exploited at approximately 8000 barrels daily, although it was estimated good for 17,000 barrels, open flow maximum, when originally completed by Farrell-Moncrief and the Arkansas Fuel Oil Co.

Originally the 5000-acre block surrounding the Lathrop discovery was assembled by John Farrell of Fort Worth. Later, W. A. Moncrief, E. A. Showers, W. S. Noble and R. S. Baker, also of Forth Worth, obtained interests with him. Then, the Arkansas Fuel Oil Co. acquired a half interest in the original block before the discovery well was completed.

About the time the Lathrop discovery was made a division of leaseholds was worked out. The Arkansas Fuel Oil Co. took the full working interest in half of the original block and a half interest in the well and the 92-acre tract on which it was located. Farrell retained a half interest in the remaining 2408 acres and a quarter interest in the producing well tract. Moncrief and associates got the other half interest in surrounding acreage and the other one-quarter in the discovery tract.

Advices from Beaumont after confirmation of the deal quoted T. F. Rothwell, vice president of the Yount-Lee Oil Co., as saying that development work would proceed. President M. F. Yount said drilling operations are necessary to protect the holdings, but he commented on market conditions as failing to justify unusual development.

End-of-the-week completions extended the Lathrop area one mile north of the discovery well and three miles southwest. Arkansas Fuel Oil Co.'s No. 1 R. S. McKinley, at 3590 feet, one mile north of the discovery, was rated good for 15,000 barrels, daily open flow. The No. 1 Fisher test of the East Texas Refining Co., Fisher & Bond, three miles southwest of the discovery, was good for upwards of 1000 barrels daily.

Between the Fisher and discovery wells, the East Texas Refining Co., in partnership with Roeser & Pendleton, Inc., completed No. 1 Rodden in the William Robinson survey, making 208 barrels the first hour at 3583 feet.

Between the Lathrop and the Kilgore area of northwestern Rusk county, 18 miles south, development will follow the finding of saturated oil sand in cores taken from the Brandon & McCamey test on the Richards tract.

The test is one mile east of the town of Kilgore and approximately four miles northeast of the present field development. At 3544 feet, the test was in an incompleted stage, but regarded as certain to produce.

TORONTO — Portland and Seattle interests are putting down a well in the Red Coulee field in Southern Alberta adjacent to Southern Alberta Exploration No. 1, in an area in which they have secured 1200 acres from leaseholders.

TORONTO—Total deliveries of crude from the Turner Valley field of Alberta were 1,312,695 barrels in 1930 as against 951,645 barrels in 1929. This increase exceeded the entire production of 1927.

TORONTO—Production of crude by International Petroleum Co., for 1930 totaled 9,766,921 barrels from 115 new wells in Peru and 20,345,916 barrels from 114 wells in Colombia.

[1] National Petroleum News, pages 25-26, Mar. 11, 1931.

The Mid-Continent Skyline

By Lawrence E. Smith

"OKLAHOMA CITY, March 10.—(AP) Charging that he was forced off the Kedburg Oil Corp. lease at the point of a shotgun, Otto Bradford, Oklahoma City oil field umpire, late Monday filed a threat complaint against the company's field superintendent. Bradford said he went to the lease to check the flow of its wells, on information he had received that the No. 1 Burris well was producing more than the allowable flow under state proration rules. . . . . Bradford charged that Matt Thomas, the oil company's field superintendent, forced him off the lease at the point of a gun, and told him that the pipe-line run from the field was 'none of his business.' "—News Item.

After reading the foregoing Mr. Ellick Botts, consulting pumper, came squarely out in favor of the greatest possible measure of protection for umpires. In a statement signed and witnessed by a notary whose commission expires in January, 1932, Mr. Botts said he was willing to offer his talents, and his sword, if need be, to the cause of proration. As a starter, he called in Mr. Arthur Cory, who aforetime has acted as consulting engineer to Mr. Botts, and between them they worked out the plan shown in an accompanying sketch.

The division of labor on this was as follows: Mr. Botts supplied the cigarets and Mr. Cory the ideas. It will be noted that the plan provides for complete safety to the umpire when he calls at a well to get the gauge. Mr. Cory's idea is that a gauge pole, which can be moved by means of pulleys and lines, will enable the measurement of a tank without getting out of the armored car.

With their usual public-spiritedness, the collaborators have offered this plan to the corporation commission of Oklahoma,

The Cory-Botts proration device, for gathering production figures from obdurate superintendents

the railroad commission of Texas, and any other public authorities having to do with proration. Their slogan is "protect our umpires—they are offering their lives for you." Any attempt by royalty owners to use this method, however, will be resisted in the proper courts.

* * *

All in all, it was a dull week, Prairie Oil & Gas Co. was involved in only two merger rumors.

* * *

Oscar Mullen, production superintendent for Derby Oil Co., was seriously injured recently in an automobile wreck near McPherson, Kans.

* * *

The services of Prof. Einstein, the great German scientist who knows all about space, will be required if the Kansas legislature passes a bill now before it. The act is designed to prohibit pipelines from crossing over or under highways.

Tom C. Johnson, who has been proration umpire in Kansas since August, 1929, resigned effective Jan. 21 and has been succeeded by Lloyd R. Pickrell. The latter has been Mr. Johnson's assistant. Mr. Johnson, a producer, has served without pay in a position that was quite ardous at times.

Kansas has no laws providing for proration, hence there is no legal method of enforcing the rules which operators agree upon. Proration in the state was begun in the Wright pool and it was extended from time to time to other flush areas. Then it began to fall down last fall, beginning with the Voshell pool, and now there is only the Ritz-Canton area of McPherson county that has a semblance of ratable taking.

In whatever proration measures are adopted in Kansas for the future, the pioneering work done by Mr. Johnson will serve as valuable precedent.

* * *

Died: In San Antonio, C. W. Wangerien, 48 years old, prominent independent producer. He had been active for a number of years in the Okmulgee district and made that city his home. He was a director of the Central National Bank, Okmulgee, and head of the Sun Lumber Co., of the same city.

* * *

Died: In Wichita Falls, M. M. Edwards, 45 years, of the Hines Oil Co. He had been in the oil industry of North Texas for 10 years.

* * *

Fred T. Manley, vice-president of The Texas Co. in charge of refineries, has been spending a few days in Tulsa.

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Several California Wells Drilling In Oil Sand Below 8500 Feet

LOS ANGELES, March 13

COMMERCIALLY productive horizons appeared certain of being extended to record-breaking levels within the near future as several California projects were reported drilling in oil sand at 8500 feet or below.

Although a number of wells in this state have been drilled to successful completion at depths in the neighborhood of 8300 feet all attempts to exceed 8500 feet have heretofore proven failures.

The deepest producing well in the state is Superior Oil Co.'s Huffman 1, North Dome Kettleman Hills, bottomed at 8323 feet. With a daily output of 11,250 barrels it is also the largest single producer. Petroleum Securities Co. takes second place with its Felix 2, also on the North Dome, bottomed at 8186 feet flowing at a rate of 5323 barrels daily.

Temporary production was obtained at lower levels in the Los Angeles Basin. A. T. Jergins Trust completed its Long Beach Community No. 28 in the Signal Hills field at 8335 feet. Water troubles have since put it on the suspended list.

At Santa Fe Springs, Oscar Howard deepened an edge well to 9350 feet but had to plug back to the Meyer sand at about 4500 feet to obtain commercial production. More recently Geo. F. Getty, Inc., drilled below 8600 feet in a deep test on the axis of the Santa Fe Springs structure without finding the pay.

Over a year ago Shell Oil Co. drilled and cored to 9280 feet in the Nesa 11 on the Signal Hill dome. Geologically this project was invaluable but no amount of swabbing could make it into an oil well.

The deepest well drilled in the state, until recently, was Standard Oil Co.'s Mascot 1 on the hills back of Taft. With the bottom at 9629 feet it has been suspended and very little information is available on the formations penetrated. Some field scouts believe the well has possibilities. Quien sabe?

With this history of previous deep tests in the California fields in mind it is evident that the news of oil sands below 8600 feet would attract considerable attention.

In the Semi-tropic district, southeast of the Lost Hills pool, Shell Oil Co. took first honors for the deepest hole when it recently stopped drilling on Williams 1, Sec. 17, 27-23, at 9700 feet. During the past week the crew was cleaning out at 8734 feet preparatory to running a liner and prospects looked more promising than indicated by cores.

While the bailer was being run, the hole was found to be bridged at 8595 feet, and when the crew cleaned out this obstruction enough oil and gas showed in the ditch to make it frothy. The oil was said to be about 26 gravity.

At Ventura Avenue, Associated Oil Co. was reported to have cored over 70 feet of oil sand in its Hartman 57 at about 8600 feet. This well is being drilled to determine the extent, if possible, of the oil zones underlying the Gosnell Shale and may be expected to go to 9000 or 9500 feet.

Several other tests in the Coastal region were recently abandoned after failing to find oil in commercial quantities at deep levels. Standard drilled Saticoy 5 to below 8500 feet and Prairie Oil and Gas Co. its Sexton 1 to nearly 8800 feet, both of the projects proving dusters.

A DEEP test of the Seal Beach field is underway by Continental Oil Co. in its McGrath-Selover No. 24 bottomed at 8743 feet in hard shale. A 6-inch hole is being drilled with a 3-inch drill pipe.

In addition to these attempts to develop deeper producing horizons, California fields offered some interesting news from drilling wells in the San Joaquin Valley. At Belridge, Ohio Oil Co. was reported in gray sand in its Bloemer 1, Section 36, 27-20, at 5919 feet. Failure attended several attempts to test the bottom sand with various formation testers. The well will be drilled ahead 15 or 20 feet and another test made. This well is considered to be on the northeast flank of the narrow Belridge play.

Reward Oil Co. is drilling at 4117 feet in brown shale on Sec. 34, 27-20. This well, No. 4, is thought to be higher on the structure than Belridge Oil Co.'s discovery well of the Temblor formation. The Belridge well is now producing 4750 barrels of 41 gravity oil per day from 5474 feet.

Under the terms of a voluntary agreement entered into between principal operating companies in the North Belridge field, no more wells will be started before May 1 of this year. There are, at present, 13 wells drilling, two rigging up to spud in and at least three suspended awaiting results of offsetting projects.

Big Lake Field Gets Natural Gas Outlet

HOUSTON, March 12.—Announcement is made at San Angelo that pipe is in transit for 118 miles of gas line that will connect the Big Lake field of Reagan county with distribution facilities at San Angelo, on the east, and the Rio Pecos plant of the Pecos Valley Power & Light Co., on the west. W. G. Van Arsdale of Tulsa, superintendent of the Oklahoma Natural Gas Engineering Corp., will supervise construction of the system.

Allhands & Davis of Dallas have contract for stringing of the 12-inch pipe, 78 miles east of the field to San Angelo and 40 miles west to Rio Pecos. Work is to begin immediately.

Texas Public Service Co., affiliated with the Oklahoma Natural Gas Co., will operate the system, providing the first commercial outlet for gas from the Reagan county field except through natural gas gasoline plants.

Court Holds Producer May Curtail Oil Output Without Forfeiting Lease

By Jack N. Westsmith

N. P. N. STAFF WRITER

LOS ANGELES, March 12 POWER of an oil company to pursue a program of curtailment even though such procedure reduces the income of the property owners was sustained in a decision made by a California Superior Court the past week.

The ruling was in favor of The Texas Co. as plaintiff on its plea for injunction to restrain M. Alta Vedder and Dwight G. Vedder, defendants, from cancelling an operating lease in the Mt. Poso field.

As assignee of Midland Oilfields Co., Ltd., The Texas Co., holds an operating agreement on 40 acres of government owned land in the Mt. Poso field, Kern county, issued to the Vedders under a prospecting permit in 1921.

Production from wells drilled on the property averages about 20,000 barrels a month under curtailment, a cut of about 36.6 per cent of the combined estimated potential of 53,847 barrels per month.

In March 1930, the company began a program of curtailment in conformity with the general California proration plan, and in November of the same year the Vedders served notice on the company to abandon the policy of curtailment and demanded that the wells be restored to full capacity within 30 days.

With a claim that the operating agreement did not require the wells to be operated at their reasonable maximum capacity as contended by the defendants, The Texas Co. took the matter into court seeking a declaration of their rights. The interpretation to be made without invalidating the rights of either party.

A decision favorable to the property owners would prove a knockout blow to the cause of voluntary curtailment and the suit was therefore followed closely by local executives of the oil industry.

In making the ruling, the court outlined three fundamental questions to be considered. First: Under the operating agreement, which is silent as to any limitation upon the control the oil company is to have over production after the wells are brought in, may the oil company pursue a process of curtailment that reduces the income of the defendant and at the same time reduces its own income in a much larger proportion.

The second question involved a determination as to whether the manner of exercise of power by the oil company in making this curtailment was reasonable, and finally whether the curtailment is in violation of the "Cartwright Act," as it stood before the amendment of Sec. 1 in 1909. A point claimed by the defendants.

THE Cartwright Act, before its amendment, made it unlawful for any combination to limit or reduce the production of any commodity. The amendment excepted from the effect of this provision any combination or association, "the object and business of which are to conduct its operations at a reasonable profit or to market those products which cannot otherwise be so marketed." The defendant property owners insisted that this amendment was unconstitutional.

The operating agreement under which the property involved was operated provides that, "Subject only to the rights of the United States, Midland (assignor to The Texas Co.) shall have the exclusive possession, management and control of the premises and the property and equipment thereon and of the drilling and/or operating of all wells thereon, and shall market and otherwise dispose of the oil and gas produced and saved by it from the premises."

The court held that this agreement made no limitation on the manner of operating the contract other than to require that four wells shall be drilled, (which was done). That there was no implied covenant that the wells should be operated at maximum capacity, only that reasonable diligence and good faith in exploring, developing should be exercised by the oil company.

ON THE subject of curtailment, the court said, "It is enough to say that, on the whole, the court is satisfied that the curtailment of the Vedder wells by the plaintiff is reasonable exercise of its power to curtail production in interest both of itself and the defendants, from which no permanent or unjustifiable damage will result to the defendants during the life of their government lease. The result of the curtailment will be to retain a portion of the oil in a natural reservoir from which it can be extracted as market conditions permit."

In conclusion, judgment and declaration was for the plaintiff to the effect: that plaintiff has the right to curtail production in a reasonable manner; that the present method of curtailment is necessary, reasonable and without discrimination as to the defendants; that the plaintiff has not breached its operating agreement by it; that the defendants have no legal ground for cancellation of the agreement; and that the injunction issued to enjoin them from cancelling the agreement for failure to comply with the demand for performance be made permanent.

Kansas Joins Ranks of States With Law Providing for Proration

TULSA, March 14

KANSAS, which has gone along ever since oil was discovered in the state without regulatory measures, has a fully equipped proration law. It is now before Governor Woodring for signature.

Passage of this law came as a surprise to many. House Bill 387 was passed by a thumping majority three weeks ago. Its companion bill, introduced by Senator Geddes, was killed by senate committee more than a week ago. Whereupon the senate called the bill out, put it on the calendar and passed it, with certain amendments which were promptly accepted by the house.

The opponents asked the governor to hear them before he signs the bill. He set March 16 for such conference. General belief is that he will sign the bill. It becomes effective upon publication in the statute books, which probably will mean little delay.

The bill as passed by the house was modeled closely after the Oklahoma law but included the additional provision that the state public service commission, which is given jurisdiction over oil and gas conservation, would have the authority to suspend drilling in a pool to prevent actual waste or inequitable taking of oil. This provision was stricken by the senate. Well versed lawyers agree that this probably was just as well, for they doubted that such provision could be sustained in the courts.

The senate also struck the provision that a receiver be appointed for companies violating the law. The remedy of the state against violators is through proceedings for injunction and contempt, in addition to which it may impose penalties itself. Appeal from the commission's decree of penalties lies in the district court.

The law begins by prohibiting waste, then defines waste to be in addition to the ordinary meaning, "economic waste, underground waste, surface waste and *waste of gas energy* and waste incident to the production of crude oil or petroleum in excess of transportation or marketing facilities or reasonable market demands." Upon the public service commission is conferred the power to make the necessary rules and regulations for the prevention of such wastes.

The section providing for proration is as follows:

"PRODUCTION Regulated—Discrimination of Purchaser Prohibited. That whenever the full production from any common source of supply of crude oil or petroleum in this state can only be obtained under conditions constituting waste as herein defined, then any person, firm or corporation, having the right to drill into and/or produce oil from any such common source of supply, may take therefrom only such proportion of all the crude oil and petroleum that may be produced therefrom, without waste, as the production of the well or wells of any such person, firm or corporation bears to the total production of such common source of supply.

"The public service commission is authorized to so regulate the taking of crude oil or petroleum from any or all such common sources of supply within the state of Kansas, as to prevent the inequitable or unfair taking from a common source of supply of such crude oil or petroleum by any person, firm or corporation and to prevent unreasonable discrimination in favor of any one such common source of supply as against another."

The definition of waste is word for word the same as that in the Oklahoma law, except for the inclusion of the term "waste of gas energy." This is recognition of the function played by gas in the production of oil. It was not recognized as of vital importance in 1915 when the Oklahoma law was passed.

Under the new Kansas law it will be possible to stop disproportionate withdrawal of gas from one well in an oil pool as against others; to prevent wells from being operated with excessive ratios of gas to oil.

The new law authorizes the public service commission to employ or "appoint" such agents as may be necessary to enforce the act. The distinction is important. In Oklahoma umpires are appointed by the corporation commission but are paid by the oil companies. The same is true in Texas. The Kansas law apparently permits the same practice there, although there has been much debate in Oklahoma's proration fight over the wisdom of such procedure.

KANSAS, by passage of this law, joins Oklahoma, Texas and California as a state having some measure of state regulation of production. New Mexico, the other state of today that possesses new fields capable of producing more than the amount being taken, has proration in the Hobbs field largely by co-operation among producers and with the sanction of state, although no legalistic machinery has been provided by the legislature. Louisiana and Arkansas have conservation laws but they touch only certain aspects of physical and underground waste.

Oklahoma, it now appears, is about finished with the proration fight, so far as the present legislature is concerned. The battle has been long and

heated. Companion bills were introduced in the house, by Cham Jones, and in the senate, by Nichols, which would repeal the state law under which the corporation commission issues proration orders.

The Nichols bill was first placed on the calendar without being referred to committee and it looked as though it would be speedily passed. After hanging around there for two weeks, it was sent to committee by a vote of 25 to 16. As the session probably will end this month, it is not likely that the bill will get serious consideration.

The house oil and gas committee conducted a lengthy hearing on the Jones bill, delayed its report at the governor's request until the meeting of the Oil States Advisory Committee at Texarkana was held, and is now ready to make its report. The wagering is that it will be reported out unfavorably.

At this time it is considered certain that the legislature will come to an end in Oklahoma with nothing added to or taken away from the present conservation laws. When Governor Murray last week affirmed his belief in proration, those on that side of the question were given powerful aid.

A vigorous fight was made in Kansas by a group of oil operators against the passage of the proration law. A. L. Derby, president of the Derby Oil Co., was a leader in the battle.

Of much concern to Oklahoma oil men in the corporation income tax bill, designed to collect on a scale of from one to 10 per cent of the net annual income. The highest figure applies on that portion of net incomes of more than $100,000 in excess of that amount. It is a vicious tax and would be oppressive to the extent that some corporations would leave the state. Its fate is uncertain. Representatives of all classes, including farmers, have appeared in protest. On the other side, it is an administration measure.

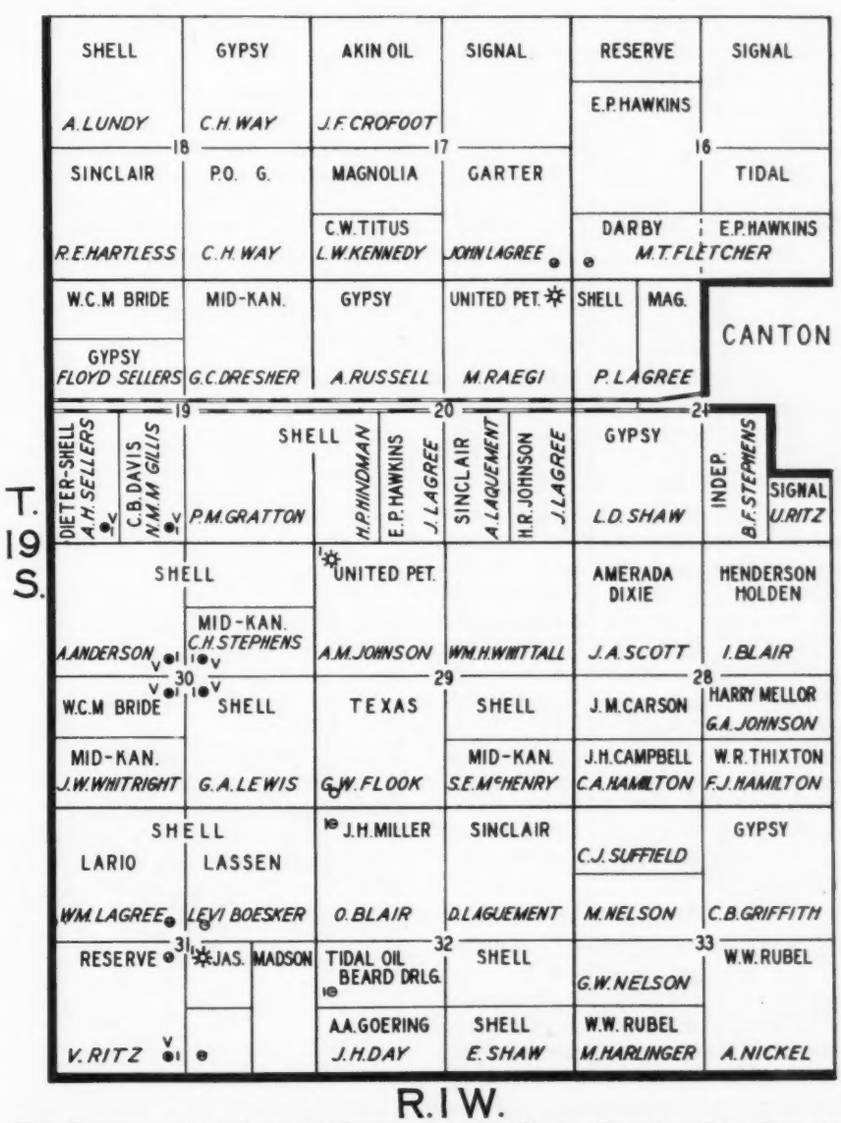
Canton Area Leads Kansas Fields In Drilling Operations

TULSA, March 14

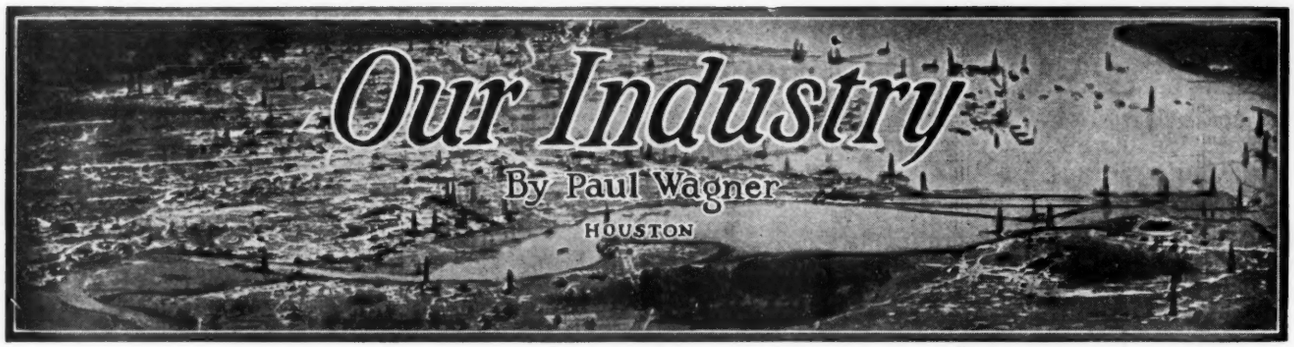
KANSAS' chief area of drilling now is in eastern McPherson county, in what is known as the Ritz-Canton area. Earlier production from the chat formation, a horizon notably unreliable in other parts of the state, was found in substantial quantities and under proration the wells have been consistent in their output.

Later developments yielded production in the Viola lime horizon, found below the chat, the Viola being slightly below 3400 feet. On the accompanying map is shown the Viola lime producers thus far completed. They range in initial production from 1264 barrels for the Reserve Petroleum Corp. well in the SE SW of 31-19S-1W to 3854 barrels for the Shell Petroleum Corp.'s well in the NW SE of Sec. 30. An outpost well on the north, C. B. Davis' No. 1 Gillis, SE SW of 19-19S-1W, is rated at 1682 barrels.

There are 46 operations under way in townships 19S-1W and the next township west. A number of substantial gas wells also have been drilled to the chat horizon.



The Canton pool, eastern McPherson county, Kans., showing Viola lime producing wells



A. D. SLOAN, vice president of the Sinclair Gulf Pipe Line Co., Houston, is spending most of his time these days at Henderson, East Texas, overseeing Sinclair shipments of Rusk county crude from loading rack facilities established there. Mr. Sloan transferred his working headquarters there several weeks ago and prior to the Tulsa announcement that the Sinclair Texas Pipe Line Co. would build 265 miles of trunk system from the Gregg-Rusk district to Oklahoma City connection with its existing Coffeyville facilities. Mr. Sloan, who spent years as a pipeliner in the Mid-Continent, before locating at Houston, is widely known throughout the southwestern industry.

* * *

It is hard for the mind to grasp the value of the product of the five great geologic sources of oil in Texas—the Ordovician, the Pennsylvanian, the Permian, the Cretaceous and the Tertiary beds,—according to Dr. Robert T. Hill of Dallas and Los Angeles, who originally mapped the Balcones fault and christened the Woodbine formation in the state. Without attempting to figure barrels recoverable from the five general sources mentioned, Dr. Hill says that if present estimates of size of the East Texas fields are correct then the district should yield 1,500,000,000 barrels of oil—equivalent in value, he says, to 50 years of California gold production.

* * *

C. C. Julian, Breckenridge driller whose spectacular promotions in California preceded later activity at Oklahoma City and Shreveport, is entering the Gregg-Rusk district of East Texas with leaseholds in the Longview and Kilgore areas. An active drilling campaign is proposed, according to East Texas advices.

* * *

Tom E. Cranfill of Dallas, president of the Independent Petroleum Association of Texas, is again actively engaged in the producing branch of the industry. Pilot Oil Co., in which he is associated with E. B. Germany and W. M. Mitchell, has brought in its first well on the Frederick tract, Joiner district of Rusk county, testing 240 barrels an hour.

Mr. Cranfill operated in West Texas with J. H. Reynolds as the Cranfill & Reynolds Oil Co., Inc., but this company was afterwards sold to the Moody-Seagraves interests of Houston, Mr. Reynolds remaining with it in an executive capacity and Mr. Cranfill retiring. From that time until now Mr. Cranfill has been inactive in a developing capacity.

* * *

Fred C. Sealey, assistant manager of The Texas Co.'s Gulf Coastal producing division, is recovering from an operation for appendicitis. William J. Sherman, also of the producing division manager's office, underwent a similar successful operation.

A. D. Sloan

* * *

Otis Massey, vice president of the R. V. Aycock Co., engaged in oil industry equipment sales, is the 1931 president of the Purchasing Agents Association of Houston. He is a member of the Houston Club, the Kiwanis club and the River Oaks Country Club.

* * *

C. V. Lee has succeeded James L. Taylor as president of the Taylor-Link Oil Co., of Houston and San Angelo. Mr. Lee was formerly vice president. F. L. Bouknight, who became vice president, was succeeded as secretary-treasurer by Bradley C. Phair of Houston. Directors include Messrs. Taylor, Lee, Bouknight, Brandon, Janes and H. E. L. Toomps.

* * *

Glenn Harroun, who is dividing his time between Henderson, Tyler and Fort Worth, is in charge of the Sinclair Oil & Gas Co.'s drilling operations in the East Texas district. He was formerly superintendent of field operations in the Oklahoma City district.

* * *

Arthur O. Behling, who served the Humble Oil & Refining Co., as its Corsicana division superintendent for Mexia-Powell operations, has been moved to Tyler, from which base he is directing that company's operations in the Gregg-Rusk district of East Texas.

* * *

Fred P. Shayes, formerly geologist with the Houston Oil Co. of Texas, in the Beeville district, is now stationed at Houston, where he is connected with the United Gas System.

ADVERTISING PAGES REMOVED

Vapor Recovery Plant Design Based on Survey of Specific Conditions

By A. W. Burket*

(*Presented before Western Petroleum Refiners Association, Excelsior Springs, Mo., March 10-12, 1931*)

IN THE stabilization of pressure distillate there is only one basic flow diagram. It is the modification of that basic flow diagram to most economically meet the conditions existing at a particular refinery that makes a preliminary survey so essential. The particular essential items in this survey that pertain to the pressure distillate stabilization are:

1. Quantity, pressure and composition.

2. Is the operation of this stabilization plant to be incorporated with the vapor recovery plant or will it be complete within itself?

3. Steam pressure available, and its value per 1000 pounds. Cooling water and its value. Electric power and its value.

4. Is there any constant source of hot oil available which may be used as heating medium for reboiler? Temperature, quantity, viscosity and gravity of such oil.

5. Gum content of pressure distillate and effect of temperature on this gum content.

6. Corrosive properties of pressure distillate.

7. Any unusual material specifications which might effect equipment cost.

8. Existing equipment which might be utilized to advantage.

The general trend of the industry is to incorporate the pressure distillate stabilizing operation with the vapor recovery plant and final stabilization plant. However many refineries already have installed their vapor recovery plants, and are now beginning to consider pressure distillate stabilization. In such cases it is generally necessary to remodel the vapor recovery plant.

Vapor recovery plants which were installed before pressure distillation stabilization was thought of, were in most cases designed to produce a gasoline similar in character to casinghead gasoline containing approximately 30-35 per cent by volume of butane. It was the proper gasoline for blending at that time.

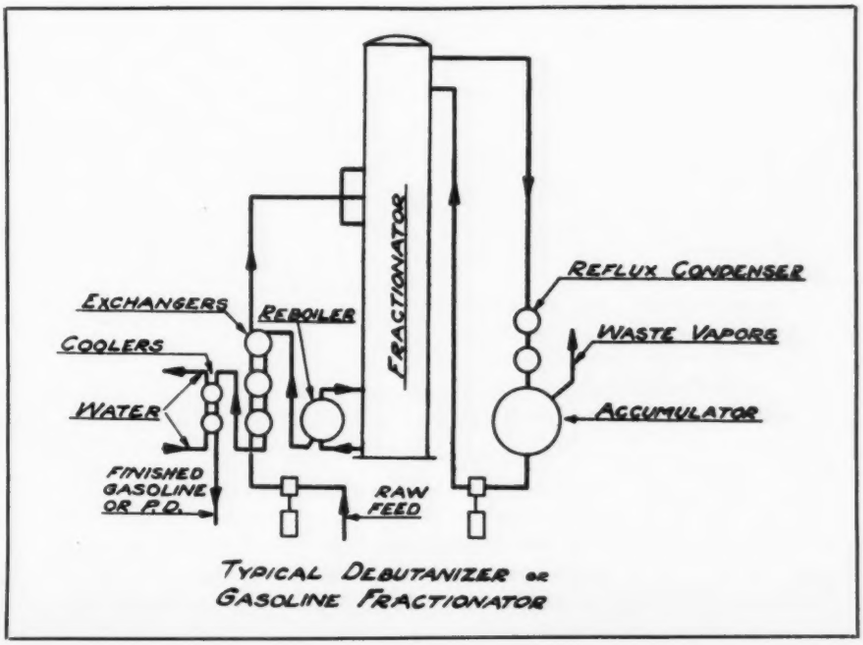
But if we stabilize the cracked distillates, we have removed propane from them, and consequently we can use a gasoline for blending containing considerably more butane than we could if the pressure distillates were not stabilized. It is purely a vapor pressure calculation. For each volume of propane we remove from the pressure distillate, we can replace with approximately 3½ or more volumes of butane, and still have the same vapor pressure on our final product. It is this relation that has made it profitable for the refiner to design his vapor recovery plant for a recovery of 90 per cent of the total butanes in his vapors.

*Jackson Engineering Corp.

Gum Content

All the distillates produced by cracking contain constituents capable of forming gum. One of the known sources of gum is the polymerization of unsaturated hydrocarbons. This tendency to form gum is accelerated by reheating the pressure distillate to an elevated temperature.

There is some maximum temperature to which the pressure distillate can be heated without increasing the gum content in the bottom or stabilized product. Thus the stabilizing equipment should be so designed that the reboiling tem-



TYPICAL DEBUTANIZER OR GASOLINE FRACTIONATOR

perature will be below this maximum temperature.

Many of the cracking plants use Grey towers for treating pressure distillates in the vapor phase. This gasoline is finished with respect to color and perhaps end point if auxiliary fractionating tower used ahead of Grey Tower but very seldom with respect to gravity and vapor pressure. In most cases it will be profitable to stabilize this product for there generally is an appreciable quantity of propane present.

In studying this Grey tower gasoline it is necessary to determine the maximum temperature to which it can be heated before it begins to show unstability as to color, as well as the maximum temperature without showing increasing tendencies to form gum. The lower temperature of these two will be the deciding factor and in general the reboiling temperature in stabilizing treated pressure distillate is lower than the reboiling temperature in stabilizing untreated pressure distillate.

The other items mentioned in the preliminary survey for the pressure distillate stabilization plant are self-explanatory but they are necessary for the complete study.

Now before we proceed with the discussion on the actual process equipment for pressure distillate stabilization, and since our paper is dealing with this stabilization plant as a part of the vapor recovery plant, we can include here the additional items necessary in our preliminary survey which have a bearing on the vapor recovery system.

1. Quantity, pressure and composition of gas from each source.

2. Value and characteristics of the various absorption oils available.

3. How will the vapors from your storage tanks be handled? Will you have a vapor return system or will you release air into the tanks when pumping from them?

4. Quantity of hydrogen sulfide present in vapors?

5. Effect of compression on corrosive properties of those vapors.

6. Ground space available.

7. Interest and depreciation rates to be used in determining annual operating cost.

8. Probable average load factors on plant.

9. Wage rates of operating personnel.

10. Administrative burden chargeable against plant.

11. Prospects of refinery expansion which may require extension of vapor recovery system.

Pressure Distillate Stabilization Plants

In the basic flow diagram the flow remains essentially the same regardless of the amount of butane and propane overhead. The operating method can be modified in many different ways, to meet the conditions most profitable to your particular refinery such as character of reboiler medium, pressure on column, combination of partial and final condensers but unless more than one overhead and one bottom product are desired, it remains a single column. An exception to this case would be, should your refinery already have a vapor recovery plant operating at low butane recovery from your vapors, and you desire to stabilize your pressure distillate without remodeling your vapor recovery plant for high butane recovery.

Under the items mentioned in the preliminary survey for the pressure distillate stabilizer, we stated that rectifying the pressure distillate accomplishes two purposes. The original purpose was to remove light fractions so as to avoid subsequent handling and distillation losses, but more recently this purpose has become secondary to facilitating distillate treatment for color and stability. The value of debutanization from this standpoint comes about through obtaining an overhead cut of from 15 to 30 per cent of the total pressure distillate which requires only a sweetening wash. Thus a treating cost of 5 to 10 cents a barrel, and a corresponding loss to acid of from 1 to 2 per cent of the pressure distillate treated, is saved, and at the same time treatment of the remaining distillate is facilitated through ease of handling a stable distillate. This saving in treating cost has added materially to the profits to be derived from pressure distillate stabilization.

It is very difficult to establish the net increased yield obtained through the stabilization of the pressure distillate. By recycling of condenser and tank vapors into the vapor recovery system, many refiners believe that if they do lose it one place, they will get it another place. However we have found that those refiners who keep an accurate overall record of their various operation, are able to trace a very distinct increase in the net yield which can be directly credited to debutanizing. The various figures we hear vary from 1 to 4 per cent.

If all the pressure distillate has been debutanized and the recoverable butane can be used, and its value is considered equal to that of heavier constituents, it is usually considered economical to recover at least 90 per cent of the butane in the gas. Occasionally low butane content, low cost of power for pumping oil, low cost of compressing gas, minimum corrosion expense, and other factors so reduce the operating cost that it becomes worth while to recover as high as 95 per cent of the butanes, although such a plant may cost 20 per cent more than a plant for recovering 90 per cent.

This cost of extracting high percentages of butane varies widely, depending largely on the percentage of butane in the gas, and its relation to the percentage of pentane and heavier. The percentage of butane extraction becomes one of the most important factors in the determination of oil circulation, absorber pressure, and, in fact all of the plant design.

The next important decision then to be made is what absorption pressure to use. Before making this decision, we must develop the following operating costs:

1. Cost of pumping absorption oil against pressures 30 to 300 pound gage.

2. Cost of compressing gas from the available suction pressures to discharge pressures from 15 to 250 pound gage.

In studying the two above costs, we must also take into

ADVERTISING PAGES REMOVED

HEATING

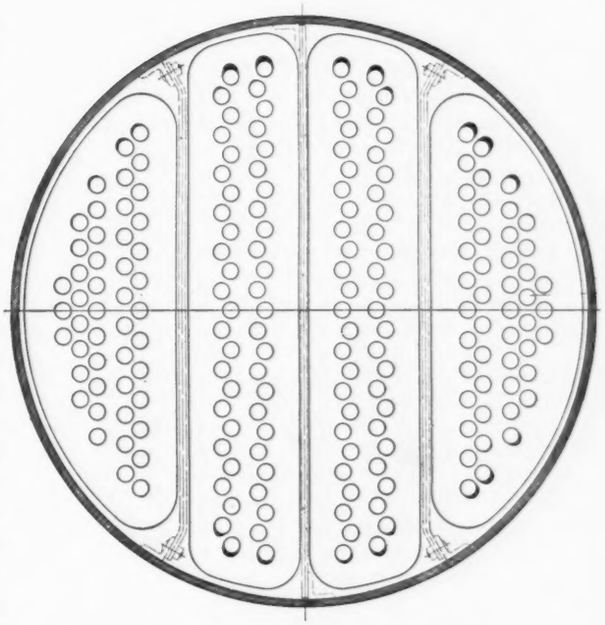
a 23° gravity residue

from 200° to 720°F

THE LEACH FRACTO CONDENSERS shown in the photograph heat 23° gravity Winkler County residue (cracking coil fresh feed) from 200° F. to 720° F. without a perceptible deposition of coke in the tubes. The B.S. and W. content of the oil ranges from .4 to .6 per cent. Coke formation has been encountered in other apparatus heating the oil over a considerably smaller temperature range. The successful operation of the Leach exchangers is due to the use of the proper tube size and number of passes as dictated by previous experience.

The heating medium is vapors at 750°F. to 780°F. from the vaporiser of a Tube and Tank cracking coil. Although the vapors are dirty, the entrained coke and tar is washed from the vertical tube surfaces by the condensate running down the tubes, and it has never been necessary to shorten cracking coil runs for cleaning of the exchangers. There are no transverse baffles to afford lodging place for coke. All cleaning is done in a few hours while the coils are down as the vertical shells are easily removed. The tubes are spaced on wide centers and the tube bundle divided into four parts with lanes permitting every tube to be reached and cleaned by sand blasting or scraping. (The photograph shows the shells lifted for sand blasting the tubes.)

The exchangers are of Leach patented design with cast channel and tube sheet and with vapor baffles permanently fastened in the shell and sliding between the floating heads when the shell is removed. Four floating heads prevent loosening of the tubes due to temperature shocks.



LEACH FOUR HEAD DESIGN

4 Vapor Passes

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consideration the characteristics of the absorption oils available at the refinery. There is still much to be learned as to the desirable characteristics of absorption oil. In general the viscosity should be low, as this promotes turbulence, high transfer rates and low pressure drops.

The boiling range should be narrow preferably 375 to 500° F. The molecular weight should be low, because since absorption is a molecular function, the oil circulation varies almost directly with the molecular weight. Good practice requires an absorbing oil of about 180 molecular weight.

With all this information regarding characteristics of absorption oils, and the cost of pumping oil against various pressures, we endeavor to find the economic pressure at which to operate the absorbers of the vapor recovery plant. There is a great diversity of absorber pressures now in use by the largest refineries varying from 15 pounds to 250 pounds.

At the very high pressures, which require two stages of compression, the operating cost of compressing the gas, due mainly to aggravated corrosion at the high pressure, makes the total operating cost of the plant higher than if a lower absorber pressure were used with a much greater oil circulation. One large refinery reported recently that the average cost of compressing his gas from atmospheric to 250 pounds, taken over a period of a year, was in excess of 4.5 cents per thousand. A large part of this cost was expensive replacements and upkeep to his compressor due to corrosion.

The general opinion, at the present time, regarding absorption pressures, seems to be between 35 and 80 pounds. These pressures fall within the limits of a single stage compression. For high butane extraction, the tendency is to use pressures between 60 and 80 pounds and for relatively low butane extraction about 35 pounds.

A true study of the economics of absorption pressure, will, in general, prove that it is more economical from an operating point to circulate oil than to compress the gas above the pressure obtainable with single stage compression.

IN THE typical conventional low pressure distillation unit, considerable variety can be applied in the method of extracting the gasoline from the oil. If the percentages of methane, ethane, and propane in the rich oil are relatively high, it is usually advisable to provide a suitable vent to eliminate as much as possible of this light material, without serious loss of desired fractions, before the distillation takes place. If these high percentages of so-called fixed gases remained in the oil and flashed in the still, it would necessitate high condenser pressures, or uneconomical reabsorption.

It has been the problem of engineers whose main interest is economical operation to modify this distillation equipment so as to accomplish the advantages of high condensation pressures without the disadvantages of high distillation pressures. Especially were they confronted with this problem in distillation, when very high butane recovery was desired, in which case the butane to be condensed most always was greater in quantity than all the heavier gasoline constituents combined.

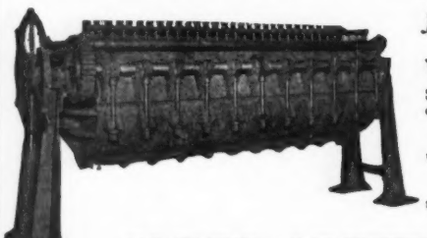
The economical solution of this problem is the use of two stills in series, the first one operated at about 80 pounds and the second one at about 10 pounds. Since complete stripping in the high pressure still is not desired, very little high pressure steam will be required. Only sufficient steam should be used so as to reduce the vapor pressure of the partially stripped oil down to the absolute pressure on the low pressure still. This will insure practically complete condensation in the low pressure condensers of the vapors distilled off in the low pressure still.

Since the second still, or low pressure still, is operated at about 10 pounds, it makes possible the use of exhaust steam for stripping purposes. The vent or uncondensed vapors from the high pressure still being at about 80 pounds, frequently correspond closely enough in composition to the rich gas to permit returning them directly to the absorber inlet, thereby eliminating separate reabsorbers or recompressers.

Since the absorber pressure in these high butane recovery plants is generally close to 80 pounds, it would be impossible, without recompression, to return these condenser vent vapors direct to the absorber, unless the distillation pressure is slightly in excess of the absorber pressure. The economics of the two still distillation units is a function of the coat of your high pressure steam, and the higher the cost of your steam, the greater the saving shown.

From an operation standpoint, which in any refinery vapor recovery plant should be the deciding factor, there are two very important considerations. These are: 1, flexibility in capacity; and 2, positive automatic control. Extreme and rapid variation in rates, due to starting up or shutting down of

CANARY ISLANDS
. . . RUSSIA . . . ITALY . . . *all use* SWEETLANDS
for Filtering Contact Clays



WITHIN the past few weeks, oil refineries in the three regions mentioned have ordered Sweetland Pressure Filters for handling contact-clays.

Kerosene, lube oils and gasoline are the products clarified.

Using Sweetlands for handling contact clays is standard practice.

OLIVER UNITED FILTERS INC.

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CHICAGO, 565 Washington Blvd. LONDON, W. C. 1, 150 Southampton Row
PARIS, T. L. Genter, Concessionaire, 63 Ave. des Champs Elysees

various units, are characteristic of refinery operations, and a vapor recovery plant to give satisfactory operation must be able to smooth out these variations as well as handle gases and vapors of widely different characteristics.

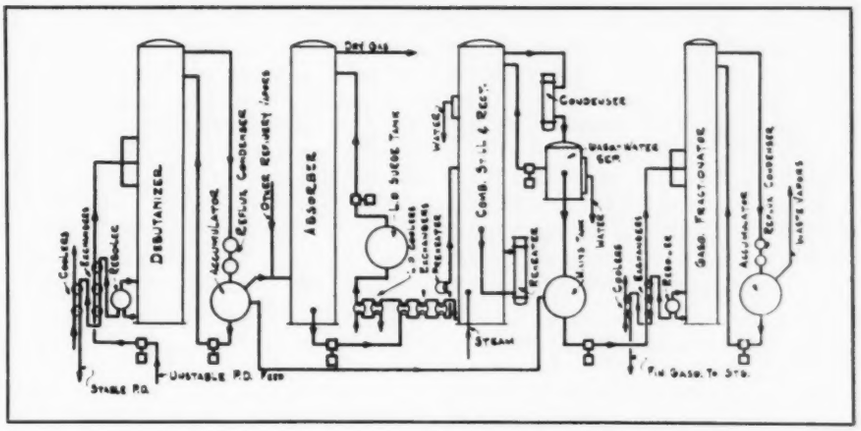
Design of equipment

In the design of refinery vapor recovery plants, much greater attention must be paid to refinements then is usually considered justified for field plants. Corrosion is frequently severe in the refinery, which makes it advisable to design all equipment for convenient accessibility and replacement of attached parts. Bubble towers should either have removable plates packed into shells, or should be provided liberally with manholes for access to plates. At the temperatures encountered in vapor recovery plants, the warping of steel bubble plates, if of adequate thickness, is negligible so either steel or cast iron plates will serve equally well, except cast iron is less susceptible to corrosion. Good practice seems to be to use cast iron in the construction of bubble caps, throats, seals, and downpipes.

Provided the essentials of good plate design are adhered to, such as ample downpipe capacity, with especially ample weir length or overflow periphery particularly in absorbers, differences in plate design become a secondary consideration to the number and spacing of plates.

Most any of the properly designed bubble plates of today have an efficiency greater than 50 per cent as compared to the theoretical plate. The greatest folly committed in the design of absorption plants, by equipment manufacturers and refinery engineers, has been skimping on the number of plates in absorbers, stills and fractionating columns.

In absorbers especially, this skimping of number of plates, adds to both the first cost and the operating cost of the plant. An insufficient number of plates necessitates the circulation of excess oil, resulting in absorption of increased amounts of fixed gases. The perfect absorber would be one which absorbed only the hydrocarbons desired, and the greater the number of plates the more nearly we approach true selective absorption.



Flow sheet of pressure distillate rectifying plant

The absorption of excessive amounts of fixed gases, due to excessive oil rates introduces a train of harmful conditions including:

1. Increased pressure drop through the heat exchange equipment
2. Reduction of transfer rate and partial pressure of gasoline constituents in condensers.
3. Increased load on recompressor or reabsorber.

The additional oil circulation increases:

1. Cost of all distillation unit equipment.
2. Cost of pumping oil.
3. Cost of steam for stripping oil.
4. Cost of cooling water for cooling oil and condensing the additional steam.

Compared with all these additional costs, the expense of additional plates in the absorbers is negligible.

In most vapor recovery plants the percentage of butane extraction is the deciding factor in determining the number of plates required. If 50 per cent or less butane extraction is desired, it is not considered good practice to use less than 16 plates. For 80 to 90 per cent butane extraction, the absorber should have at least 24 plates and several excellent refining engineers believe that as many as 30 plates are justified.

The temperature which controls the amount of oil circulated in an absorber is the rich oil outlet temperature. This can be reduced in two ways, either by decreasing the temperature of the lean oil to the absorber or by intercooling in the absorber or by both. When accomplishing high butane extraction at 60 pounds or higher this oil temperature rise through the absorber may be 30 to 40° F. In this case it is generally economical to apply intercooling in the absorber.

By maintaining a relatively low temperature throughout the tower, the partial pressure of the butane in the rich oil is kept relatively low. This same low partial pressure of butane could be achieved without intercooling only by the circulation of additional oil. In some cases, intercooling may result in a saving of 25 to 30 per cent in the oil circulation.

The still is the heart of the recovery plant. Insufficient stripping plates will necessitate the use of excessive direct steam. Good practice indicates that the still should have at least eight stripping plates. The inlet oil temperature should be within 20 to 40° of the temperature of the available heating steam.

The temperature of the partially stripped oil near the base of the still is of greater importance than the inlet oil temperature, as it is this temperature at the base where the extraction of heavy gasoline ends takes place which controls the quantity of direct steam used.

As the only purpose in reheating is to reduce the quan-

tity of steam required for stripping the heavy ends, it is obvious that the oil should be reheated after the temperature lowering due to distillation of the light ends, but before final contact with the steam. This is best accomplished by locating the reheater well down the column, but above at least two or three of the final stripping plates.

The use of internal heaters is not recommended, as these heating surfaces may require inspection, cleaning or replacement due to corrosion. With an internal heater, such work will require a plant shutdown. An outside heater can be by-passed with only temporary reduction of economy due to increased direct steam while the heater is being by-passed.

The rectifying part of the still should be directly above the stripping plates, and should be built into the same tower. This rectifying section is of great importance particularly if light absorption oil is used.

Good practice calls for eight rectifying plates with at least one water draw-off plate. End point control can be accomplished in three ways: 1, pumping back gasoline; 2, pumping pure water operating on a closed system; or 3, the use of reflux condensers. Either of these three methods will provide control of the end point, but most of the refining engineers today prefer the pumping back of gasoline.

Cooling Equipment

Absorption oil coolers are especially important and should be designed to cool the oil to within 5 to 6° of the temperature of the circulating water. A 1° temperature reduction in the absorption oil to the absorbers, effects a saving of approximately 2 per cent in oil circulation.

In any cooling system by-passes should be installed to permit the cleaning of any individual cooler without shutting down the plant. The inside of the tubes on closed coolers should be accessible without breaking any pipe connections.

Final Fractionating Equipment

If the vapor recovery plant has been designed for high butane recovery, which high butane recovery has consequently increased both first cost and operating cost, the final fractionating unit must necessarily be designed for close separation between propane and butane. The important considerations entering into the design of this unit are:

1. Flexibility in capacity and quality of feed.

2. Design of column for sufficiently high operating pressure.

3. Ample number of fractionating plates. Thirty plates should be the minimum number for close separation and in some instances forty plates are justified.

4. Ample reflux condenser surface.

5. Ample reboiler surface.

6. Full automatic control. This may add materially to the first cost but it pays dividends many times in assuring constant and efficient operation.

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New Patents

Prepared by R. E. Burnham, patent and trade-mark attorney, 1343 H Street, N. W., Washington, D. C., from whom copies may be obtained at the rate of 20c each. State number of patent and name of inventor when ordering.

January 20, 1931

REFINING

Method of polymerizing hydrocarbon distillates — Rudolph C. Osterstrom, Julius Hyman, and Cary R. Wagner, Chicago, Ill., assignors to Pure Oil Co., same place. No. 1,789,413.

Process and apparatus for recovering gasoline from gas—Nathaniel E. Loomis, Westfield, N. J.. assignor to Standard Oil Development Co. No. 1,789,470.

Process of treating hydrocarbons—John C. Black, Los Angeles, Calif. No. 1,789,510.

Apparatus for dephlegmating vapors —Walter M. Cross, Kansas City, Mo., assignor to Gasoline Products Co., Wilmington, Del. No

Oil-refinery condenser—Joseph Price, Stapleton, N. Y. No. 1,789,880.

PRODUCTION

Interchangeable post construction for derricks—Leslie A. Rawson, Los Angeles, Calif., assignor to Emsco Derrick & Equipment Co., same place. No. 1,789,598.

Sucker-rod elevator — George E. Fritts, Harbor City, Calif. No. 1,789,-701.

Control-head for oil and gas wells—Samuel T. Peppard, Fullerton, Calif. No. 1,789,771.

Rotary disk drill—Henry M. Paulsen, Los Angeles, Calif. No. 1,789,834.

Valve construction for gas lift pumps —Arthur F. White, Fullerton, and Frank W. Jordan, Los Angeles, Calif., assignors to Jordan & Taylor, Inc., Los Angeles. No. 1,789,855.

Gas lift for oil-wells—William A. Gammack and Donald G. Knox, Long Beach, Calif., assignors to Jordan & Taylor, Inc., Los Angeles, Calif. No. 1,789,866.

MISCELLANEOUS

Liquid-dispenser—Milton L. Baker, San Rafael, Calif., assignor to Standard Oil Co. of California. No. 1,789,-291.

Gum-inhibitor for hydrocarbons (petroleum distillate fuel containing an acyl derivative of an aromatic amine) —William S. Calcott, Penns Grove, N. J., and Ira E. Lee, Wilmington, Del., assignors to E. I. du Pont de Nemours & Co., Wilmington. No. 1,789,302.

Chain control for pumps — Leo Deutsch, Beaver, Pa., assignor to Wayne Pump Co., Baltimore, Md. No. 1,789,429.

Gear lubricant—Stanley D. White and Carl L. Knopf, Chicago, Ill., assignors to Sinclair Refining Co., New York, N. Y. No. 1,789,614.

January 27, 1931

REFINING

Process of extracting benzene hydrocarbons from gases — Fritz Breitbach, Rocklinghausen, Germany. No. 1,790,-571.

Method of refining mineral oils—Arthur Lachman, Berkeley, Calif., assignor to Richfield Oil Co., Los Angeles, Calif.

Vapor Phase Refining

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Conditioning Refinery Water

Drinking Water at Industrial Plants and Oil Camps; Filtration; Chlorine, Violet Ray and Ozone Treatment; Water for Treating Purposes

By Sidney Born*

Part 6

IT IS quite important that an adequate supply of pure drinking water be available at any industrial plant. Water for this purpose should be clear, have a good taste and odor and be free from any harmful bacteria. It should not contain any excessive amounts of salts or be contaminated by organic wastes.

Deep well waters, provided that they do not contain excessive amounts of salts, usually fulfill all of the above conditions, and no further treatment is usually necessary for waters of this type. However, they should be checked periodically by a chemical as well as a bacteriological analysis to make sure that the water is not being contaminated by leakage through casing from other stratas or through surface contamination.

Shallow wells, streams, creeks, lakes and other sources of this type are liable to contamination from sewage, organic waste and other sources. Waters of this type almost necessarily demand a purifying treatment of some sort. If the water is turbid or contains suspended matter, it should be filtered, preferably with the aid of a coagulant, such as aluminum sulfate or ammonia alum.

These coalugating substances act by forming a gelatinous precipitate of aluminum hydroxide or basic aluminum sulfate in the presence of small amounts of alkali, and this gelatinous precipitate helps to entrap or coagulate the suspended particles and also acts as a filter aid, coating and sand particles in the filter, then acting as an absorbent and resulting in a better filtration[1].

Filters used are of two types. For small water supplies a closed pressure filter is usually employed. These filters consist of a metal drum containing a collecting system on which is placed a coarse layer of gravel and succeeding finer layers of gravel and sand. Water passes through these filters and the suspended particles are retained in the filter. Filters of this type must be provided with means for reversing the flow to wash back the filter when the flow becomes sluggish and the filters fill up with impurities.

The accompanying cut shows a filter of this type. Its operation is as follows:

Water enters the filter through the top and is distributed uniformly over the filter bed by a baffle, which prevents the incoming water directly striking the sand bed and disturbing the surface film. The water passes downward through the filter sand and gravel, the clean filtered water uniformly collected from beneath the gravel by the manifold system, through which it passes to the filter outlet.

To remove the collected sediment or suspended matter, the filter is periodically cleaned by reversing the flow of water. Wash water enters at the bottom, is first distributed by the manifold system, and then by the gravel layers. As the water rises the filter bed expands and is loosened, the sediment lifting and passing out to waste with the wash water.

Where it is desirable to provide for continuous service, the advantage of filtered water storage is obvious. But if storage to tide over the brief washing periods cannot be provided conveniently, a battery of two or more filters should be used. Only one filter of a battery is washed at a time and a complete shut-off of the filtered water supply is thereby prevented.

Another advantage of having filtered water storage is that the filter may be washed with filtered water, and this is always desirable and sometimes necessary.

In larger installations, especially in case of municipal water supplies, gravel and sand filters consisting of open top concrete tanks can be employed. The same principal as in the smaller pressure filters is used. After filtration pathogenic bacteria may be destroyed either by treatment with chlorine, ultra violet ray or ozone.

For large supplies, the chlorine method is preferable, a predetermined amount of chlorine being fed through a reducing valve from a cylinder directly into the water supply. Undesirable odors and tastes can be removed by the proper application of NH_3, sulfur dioxide filtration through activated carbon and aeration.

For small water supplies, the ultra violet ray system can be used. The ultra violet ray has the property of destroying any pathogenic bacteria that may be present and there are various forms of ultra violet ray lamps on the market for this purpose. One type that has been successfully used for

*Marathon Oil Co.

[1]For a more complete treatise on coagulation the reader is referred to The Chemistry of Water and Sewage Treatment by A. M. Buswell. Published by the Chemical Catalog Co. Inc.

installations of this sort consists of a mercury vapor lamp enclosed in a container having a quartz window.

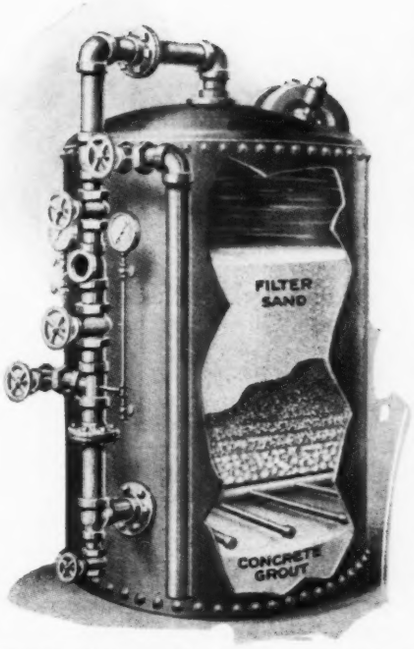
Glass cannot be used for this purpose as the glass will not permit the ultra violet rays to pass through, but quartz has this property. The water is slowly circulated past the ultra violet ray lamp and a very short exposure suffices to kill all bacteria. It is very important however that the water be absolutely clear as any turbidity will interfere with the action of the ultra violet ray.

The ultra violet ray method is satisfactory but is not applicable where waters have disagreeable tastes or where dissolved organic matter is present, and for such waters the ozone treatment is better. There are a number of ozone machines on the market which can be used for this purpose. Ozone is produced by passing air through a high frequency electric discharge. Ozone has the property of destroying all pathogenic bacteria as well as odors due to dissolved organic matter.

The most recent development in water purification for domestic consumption has been the process of chlorination with considerable excess of chlorine and then deodorization and removal of excess chlorine by the use of activated carbon filters.

The use of chars or carbons for purifying substances was known to ancients and is largely used today in various industrial processes such as the refining of sugar. Three types of charcoal are available for filtration purposes. Animal charcoal is largely derived by calcining bones and similar animal refuse. Vegetable charcoal is manufactured from the husks of nuts, such as cocoanuts, rice hulls and various woods. Mineral charcoal, as its name indicates, is obtained from mineral sources such as lignite.

The manufacture of activated charcoal from lignite is carried out by crushing the lignite to about two to four mesh and charging it continuously to a retort where it is subjected to destructive distillation at high temperatures. The volatile matter is driven off and the



Closed pressure filter for small water supply installations. Courtesy International Filter Co.

carbon is continuously discharged from the retort, cooling being conducted in such a way as to avoid oxidation. For some purposes the charcoal is further treated with dilute acid.

Activation of charcoal is carried out by careful heating at temperatures of from 900 to 950 degrees centigrade, while a current of steam, carbon dioxide or chlorine is passed through the retorts. This treatment enormously increases the activity of the carbon.

Each of these charcoals has its peculiarities and some are more suitable for the absorption of certain substances than others.

Carbon filters are especially useful in removing traces of organic odors which are liable to be present in surface waters. This type of filter is similar to the quartz or sand filter, and provisions should be made for revivifying the activated carbon by treatment with dilute caustic soda at intervals of about six months.

All water supplies used for drinking and domestic purposes should be frequently checked by bacteriological analysis to determine whether the water is free from contamination and pathogenic organisms. Where laboratory facilities are not available at the plant for this work, co-operation can usually be secured through municipal or State Boards of Health.

Water for Treating Purposes

Petroleum products of various types are purified by chemical treatment with acid, alkali, sodium hypochlorite and other substances. It is customary to remove any reaction products remaining in the oil by the use of a water wash. In the case of light distillates such as gasoline and kerosine, a cold water wash is employed. In case of heavier distillates such as lubricating oil distillates, hot water is used as there is less tendency to form emulsions with hot water.

Water for treating purposes should have the following characteristics:

1. It should be clear, absolutely free from mud, silt or suspended matter. If the water is not clear and free from suspended matter, mud, etc., it may not only result in discoloration of the finished oils, but the presence of colloidal suspended matter may cause very troublesome emulsions.

2. The water should be free from large amounts of dissolved organic matter, oil or discoloration of any sort. Discolored waters due to organic contamination may result in discoloring gasoline or kerosine. It is quite necessary to remove any traces of crude oil or dark colored distillates that may find their way into a water supply through leakage, as even a small trace of these may result in serious discoloration of the finished products.

3. Water used for treating purposes should not contain excessive amounts of magnesium or calcium salts, as these have a tendency to form troublesome emulsions, especially in the treatment of lubricating oils.

The methods for removing these impurities are fully discussed in the chapters on boiler feed water and condenser water treatment. The same methods applicable there are applicable to water for treating purposes.

* * *

The writer wishes to express his appreciation to Mr. Lawrence K. Cecil for many helpful suggestions in the preparation of this article.

Chemistry of Fuels Greatest Problem Before Refiner and Motor Builder

By Earl Bartholomew*

(Presented before Western Petroleum Refiners Association Meeting, Excelsior Springs, Mo., March 10-12, 1931)

IN CONNECTION with the measurement of detonation, there are three major problems:

1. Scale of measurement;
2. Knock testing apparatus;
3. Correlation of technique of measurement with conditions under which fuels are to be used.

By far the greater portion of the confusion which existed for a number of years regarding knock ratings was due to the lack of a universal scale for describing knocking tendency. Scales were almost as numerous as laboratories which attempted to make knock ratings. Such terms as benzol equivalent, xylidine number, highest useful compression ratio, maximum permissible spark advance, greatest permissible throttle opening, knock rating scale of Company A, cubic centimeters of lead tetraethyl below Ethyl standard, et cetera, have only recently passed from general use. Some of these scales were established in terms of stable fuels which were available in sufficient quantities to serve the needs of their users for a few years but oftentimes it was necessary to change from time to time the basic materials for standards.

Reporting knock ratings in terms of engine adjustments such as throttle opening, compression ratio or spark setting was even more unsatisfactory, such ratings being true on only one engine for the atmospheric conditions and mechanical ad-

(*Continued on Page* 76)

*Director of Engineering Laboratory, Ethyl Gasoline Corp., Detroit.

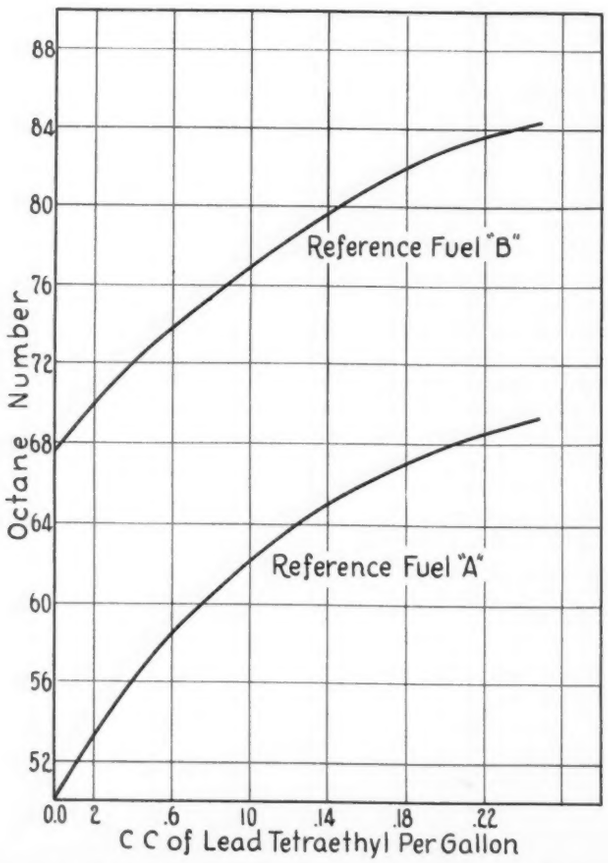


Fig. 1—C.c. of lead tetraethyl per gallon of reference fuels "A" and "B" vs. octane number at 212 F.

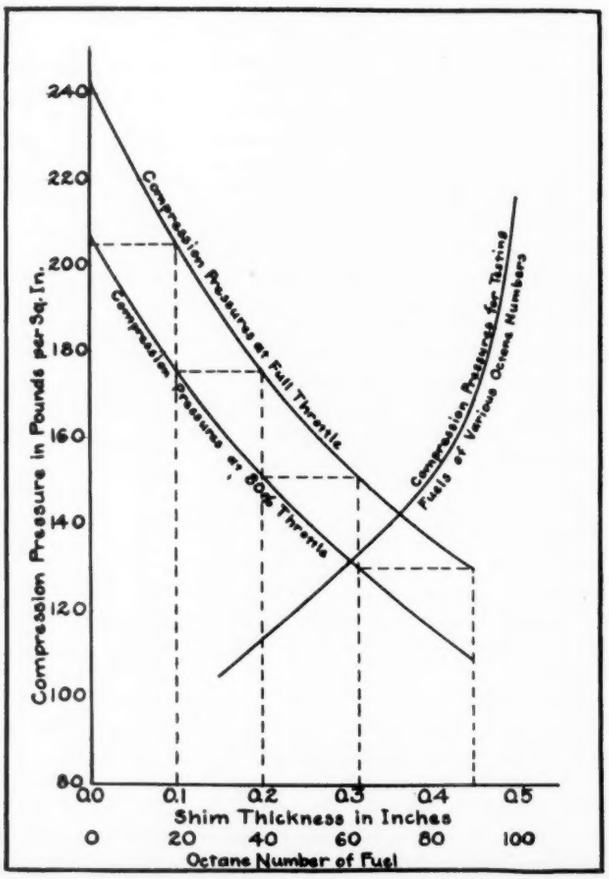


Fig. 2—Curves showing different compression pressures employing split-shims

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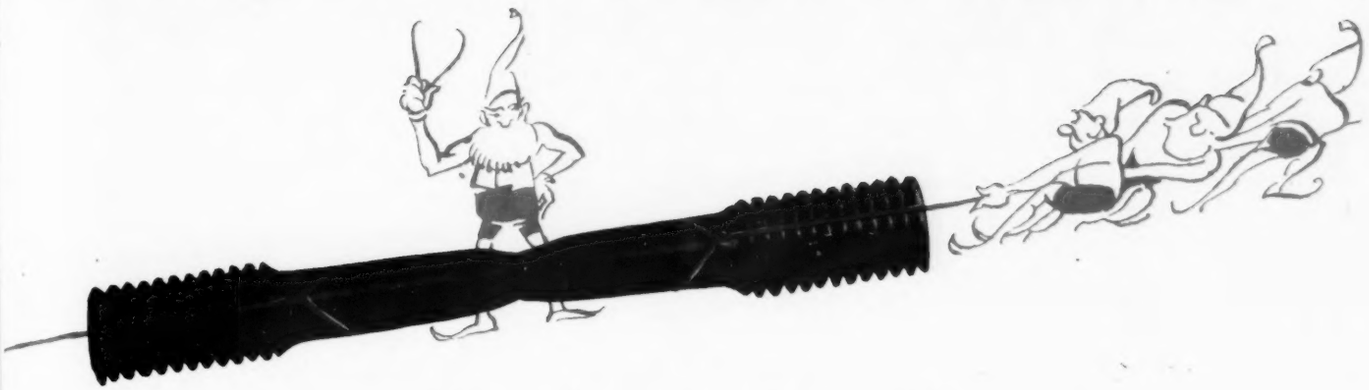

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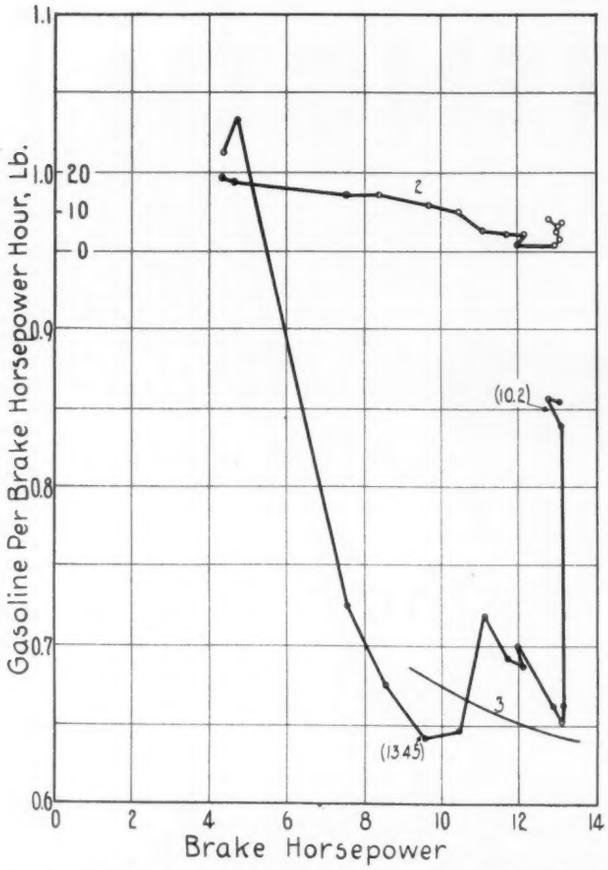

Fig. 3—500 R.P.M., 6.04 high compression head. (Inside scale at left is spark advance, degrees)

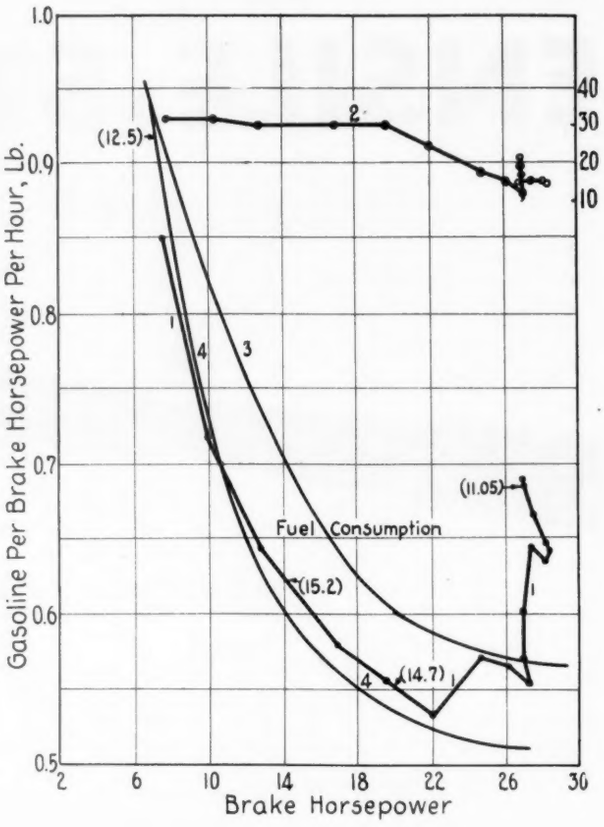

Fig. 4—1000 R.P.M., 6.04 high compression head

Figs. 3 and 4—Comparison of characteristics of standard carburetor with those of ideal carburetors giving maximum power and maximum economy. 1. Standard carburetor. 2. Best spark advance with standard carburetor. 3. Ideal maximum power carburetor. (Air-fuel ratios are shown in parentheses)

justments existing on one particular day.

A description of the knocking tendency of a fuel in terms of the quantity of knock suppressor that must be added to the sample to make it equal in antiknock value to the Ethyl gasoline or other standards is meaningless for two reasons:

1. Due to the difference in susceptibility of fuels to improvement by the addition of knock suppressors, two fuels of equal antiknock value may require the addition of quite different quantities of knock suppressor to equal a given standard.

2. The antiknock effect (measured in any useful terms) resulting from the addition of knock suppressors is practically never a linear function of the quantity added except for quite small additions.

Needless to say, it was usually impossible to interpret on the scale of one laboratory knock ratings obtained by a laboratory which used a different scale. As a result, automobile, aircraft and other engine manufacturers had no conception of the quality of fuels available except insofar as a few were able to make tests of antiknock value in their own laboratories on samples collected in the field.

Executives of oil companies, not having a true conception of the quality of fuel which could be produced from various crudes by different processes were oftentimes not in a position to make decisions in matters involving refinery technique or marketing which were based on the true economics of the problem.

Fortunately, the standard reference fuels suggested a few years ago by Dr. Graham Edgar* have come into general use. One of these fuels is normal heptane which has a knocking tendency greater than that of any gasoline produced. The other is (2, 2, 4) trimethyl pentane, an iso-octane whose antiknock value is greater than that of any fuel likely to be produced commercially for some years to come.

The antiknock value of any fuel produced commercially today may be expressed as the percentage, by volume of iso-octane required in a mixture of iso-octane and normal hep-

ON ACCOUNT of the relatively high cost of normal heptane and iso-octane, two new secondary reference fuels for knock testing have been prepared by the Standard Oil Co. of New Jersey for use in routine testing in American and foreign laboratories. 35,000 gallons of each of these fuels have been placed in pressure storage which should be ample supply for the world for several years, for this purpose.

*Oil and Gas Journal, March 5, 1931, "Progress in Knock Testing," Graham Edgar.

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tane to equal the unknown sample. Since comparisons are always made with a standard reference fuel, the effect of variations in atmospheric and engine conditions is largely eliminated. Such reference fuels can be produced from time to time in a pure state, hence knock ratings expressed by means of this scale are not subject to change as a result of the necessity for preparing new stocks from time to time.

The present cost of approximately $25.00 per gallon for normal heptane and iso-octane precludes their use as working standards except perhaps for the rating of certain types of aircraft fuels. To meet this situation the Standard Oil Co. of New Jersey has prepared its so-called reference fuels A and B.

Reference Fuel A is a mixture of straight-run gasolines prepared from Oklahoma City and Colombia crudes and has an octane number of approximately 50. Reference Fuel B is a straight-run California gasoline having an octane number of approximately 67.6, both ratings being at 212°F. jacket temperature, 600 r.p.m. on the Series 30 knock testing engine.

The range between 50 and 67.6 octane numbers may be covered by the addition of lead tetraethyl to reference fuel A, while octane numbers up to 85 or slightly more may be obtained by the addition of lead tetraethyl to reference fuel B.

Approximately 35,000 gallons of each of these stable reference fuels have been stored in pressure stills to prevent evaporation and it is estimated that these qauntities will be sufficient to supply the world's requirements of secondary reference fuels for several years. It is reasonably certain that the crudes from which these reference fuels were made will be available for a period of years so that reference fuels of essentially the same characteristics can be prepared when the present stocks are exhausted.

Curves of lead tetraethyl required in reference fuels A and B at 212°F. jacket temperatures, 600 r.p.m. on the Series 30 engine, plotted against octane number are shown in Fig.

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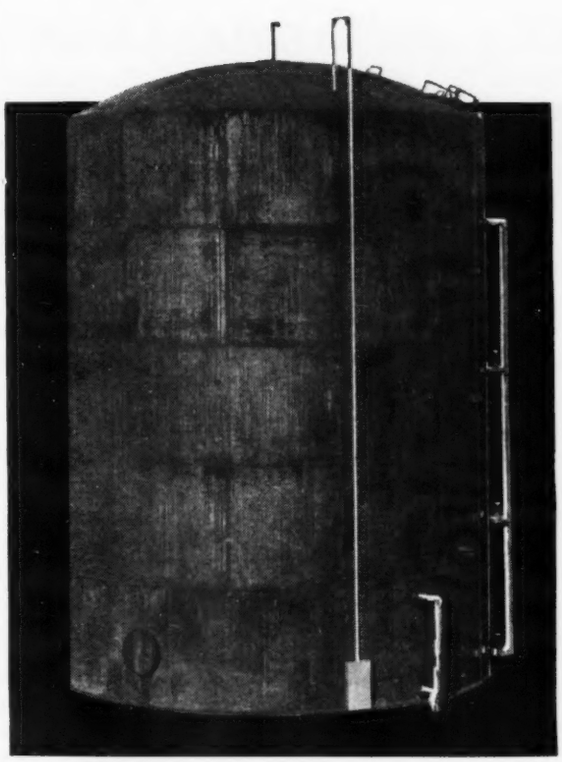

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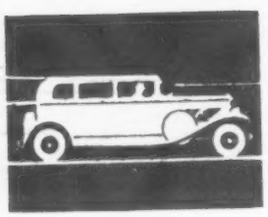

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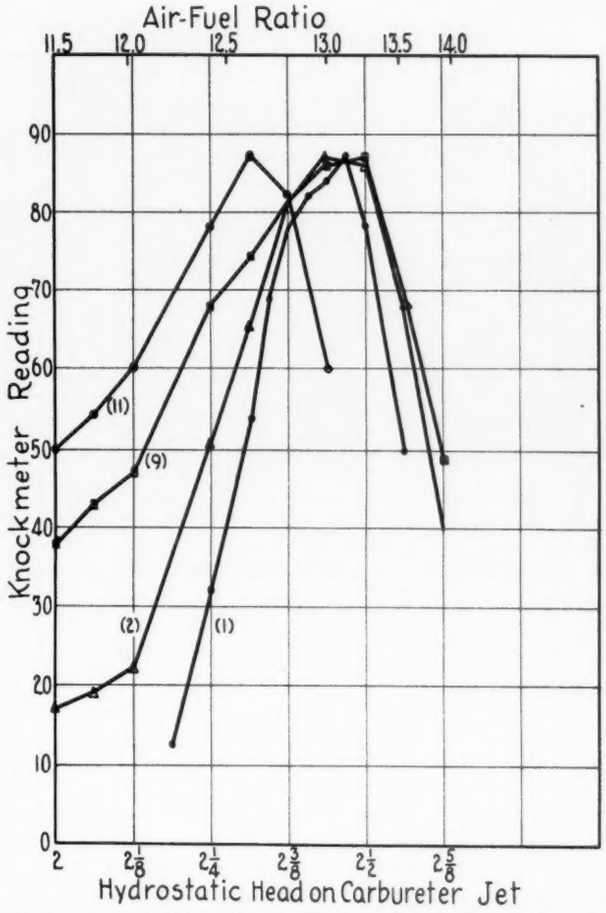

Fig. 5—Knock intensity as affected by air-fuel ratio. 1—Blend of California, Colombia and Mid-Continent straight run. 2—Straight run Mid-Continent. 9—Blend of Mid-Continent cracked and straight run. 11—Octane-heptane mixture (74 octane number)

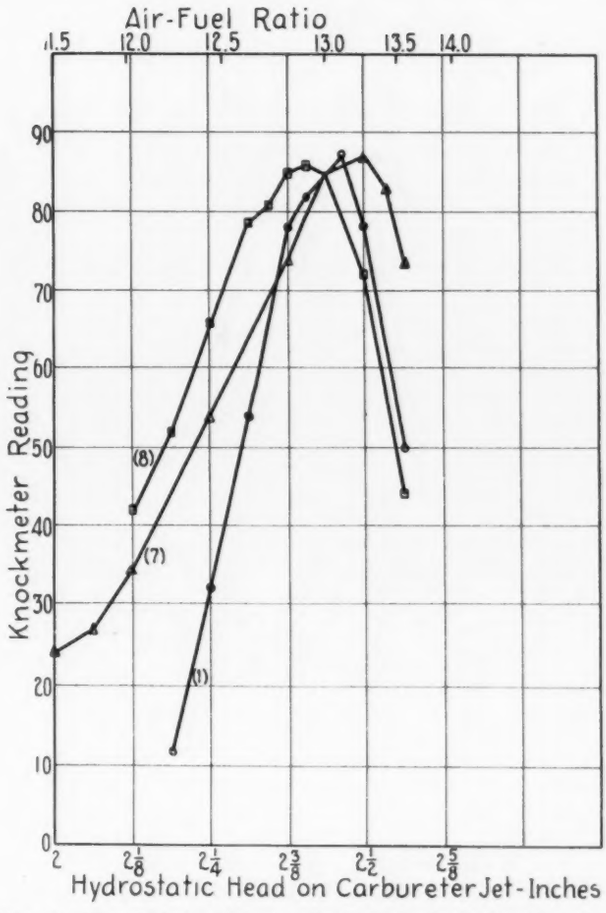

Fig. 6—Knock intensity as affected by air-fuel ratio. 1—Blend of California, Colombia and Mid-Continent straight run. 7—Blend of Mid-Continent cracked and straight run. 8—Blend of Mid-Continent cracked and straight run

1. The curves represent the average of data obtained in 20 laboratories using identical technique and equipment, the maximum variation in the data for a single point having been less than 0.5 octane number.

For engine conditions other than 600 r.p.m. and 212°F. jacket temperature, it is, of course, necessary to construct other curves. This is particularly true if aviation fuels are to be rated at 900 r.p.m. at jacket temperatures up to 350°F.

It is apparent that laboratories may report the results of knock tests in terms of octane number without actually using normal heptane and isooctane during determinations, if the standardized secondary reference fuels are used or if laboratories have previously determined curves of lead addition to their own reference fuels versus octane number.

It is almost impossible to estimate the far reaching importance of the standardization of knock measuring scales. Members of different laboratories now have a common language for discussing the measurement of detonation and engine manufacturers will soon have available complete information on the antiknock value of fuels available for the operation of their engines. The setting of compression pressures has in the past been accomplished on the basis of very meager information and in other cases on the basis of guesswork or hope but it should now be possible for a manufacturer to adjust his engines to take maximum advantage of the qualities of the fuels which are destined to be used in the engines without fear that trouble will be encountered in the field.

The standardized reference fuels should be welcomed by the aircraft industry which has experienced much trouble due to the use of fuels of insufficient antiknock value. Until recently it has been impossible for an aircraft engine manufacturer to describe the type of fuel which should be used in a given engine. As a result, the refiner knew little about the type of fuel which he should offer the operator and the latter, in turn, had no conception of the type of fuel required or that quality of the fuel which he purchased.

It would be a great step forward if the manufacturers of all types of engines would stamp on them the minimum octane number of the fuel that should be used. The specification on engines of the proper type of lubricating oil to be used has no doubt saved many engines from premature destruction.

Knock Testing Engine Improvements

Five years ago there were probably not three engines in the world which were capable of making satisfactory knock ratings. Today there are hun-

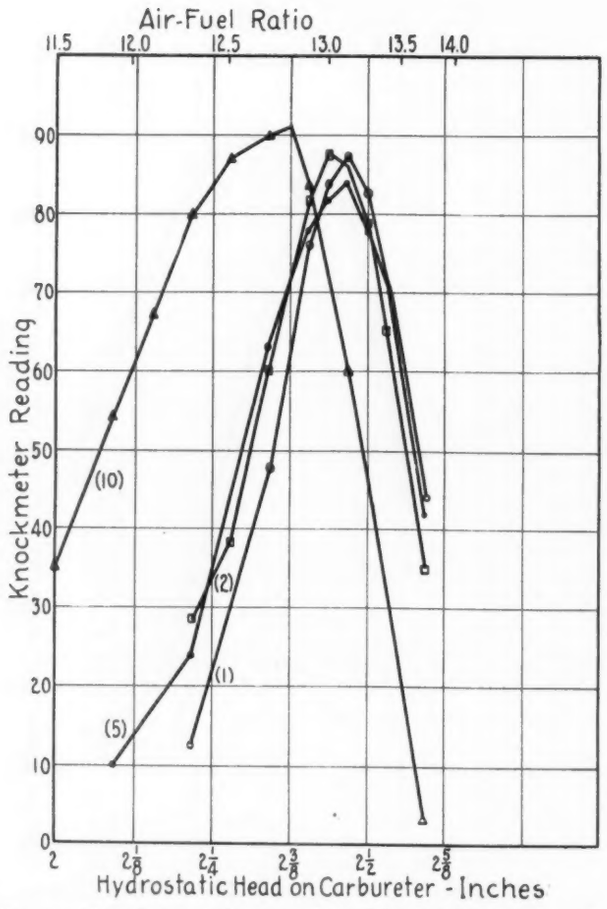

Fig. 7—Knock intensity as affected by air-fuel ratio. 1—Blend of California, Colombia and Mid-Continent straight run. 2—California straight run. 5—Blend of Mid-Continent cracked and straight run. 10—Benzol blend

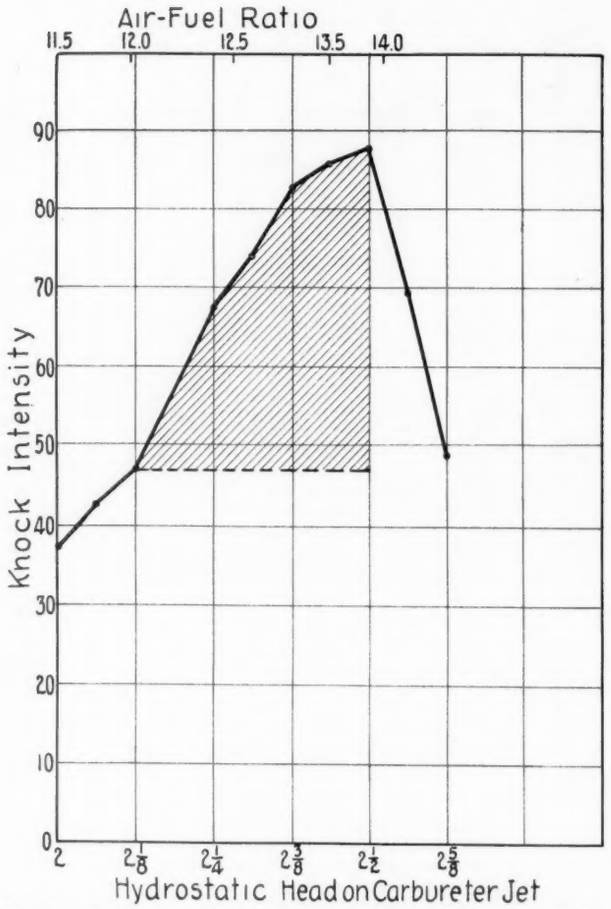

Fig. 8—Future requirements may demand that motor fuel specifications include a provision outlining the limits of air-fuel ratios and their effect on fuel performance. Above curve prepared from blend of Mid-Continent cracked and straight run

dreds of satisfactory standardized engines distributed throughout the world. The routine testing of check samples by these widely separated laboratories has indicated their ability to agree within one octane number on the rating of any sample. Ratings are being made every day with an accuracy which is out of all proportion to the variations in the performance of fuels in different types of engines.

Changes have recently been made in the Series 30 knock testing engine to facilitate the changes in engine adjustment necessary for the ratings of aviation fuels under conditions selected to give ratings comparable with those obtained in aircraft engines and to effect certain other improvements in operation. It has been proved quite definitely that variations in knock rating are much more likely to be present at small throttle openings than at throttle openings approaching the wide-open position.

A set of split shims has been developed for the Series 30 engine having such thickness that by their use not less than 80 per cent full air consumption need ever be used when rating fuels having a range of antiknock value of 30 to well above 100 octane number. At wide open throttle one shim in the series produces a compression pressure which is equal to the compression pressure produced by the next thinner shim at 80 per cent full air flow and so on as shown in Fig. 2.

It is not necessary to remove the cylinder to insert the shims and there is no oil leakage. In view of the fact that small throttle openings are never used the change of compression pressure with change of throttle opening is quite slow, hence a vernier adjustment is possible.

The shim chosen for use when Ethyl gasoline stocks are to be rated gives proper knock intensity at wide-open throttle for the operation of the bouncing pin when a fuel of 80 octane number is used. At the proper knock intensity for 74 octane number, 93 per cent of full throttle air is used. The total range of antiknock value which can be covered with this single shim at not less than 80 per cent full throttle air consumption is from 80 down to 59.0 octane number.

Effects of Engine Characteristics on Relative Antiknock Value

Now that satisfactory knock testing apparatus and scales of antiknock value have been established, tools are available for the investigation of the relation of the chemistry of fuels and test engine conditions to the performance of fuels in engines destined to use them. Of the three major problems of knock testing, the latter is by far the greatest confronting

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Medium	175	300	300	300
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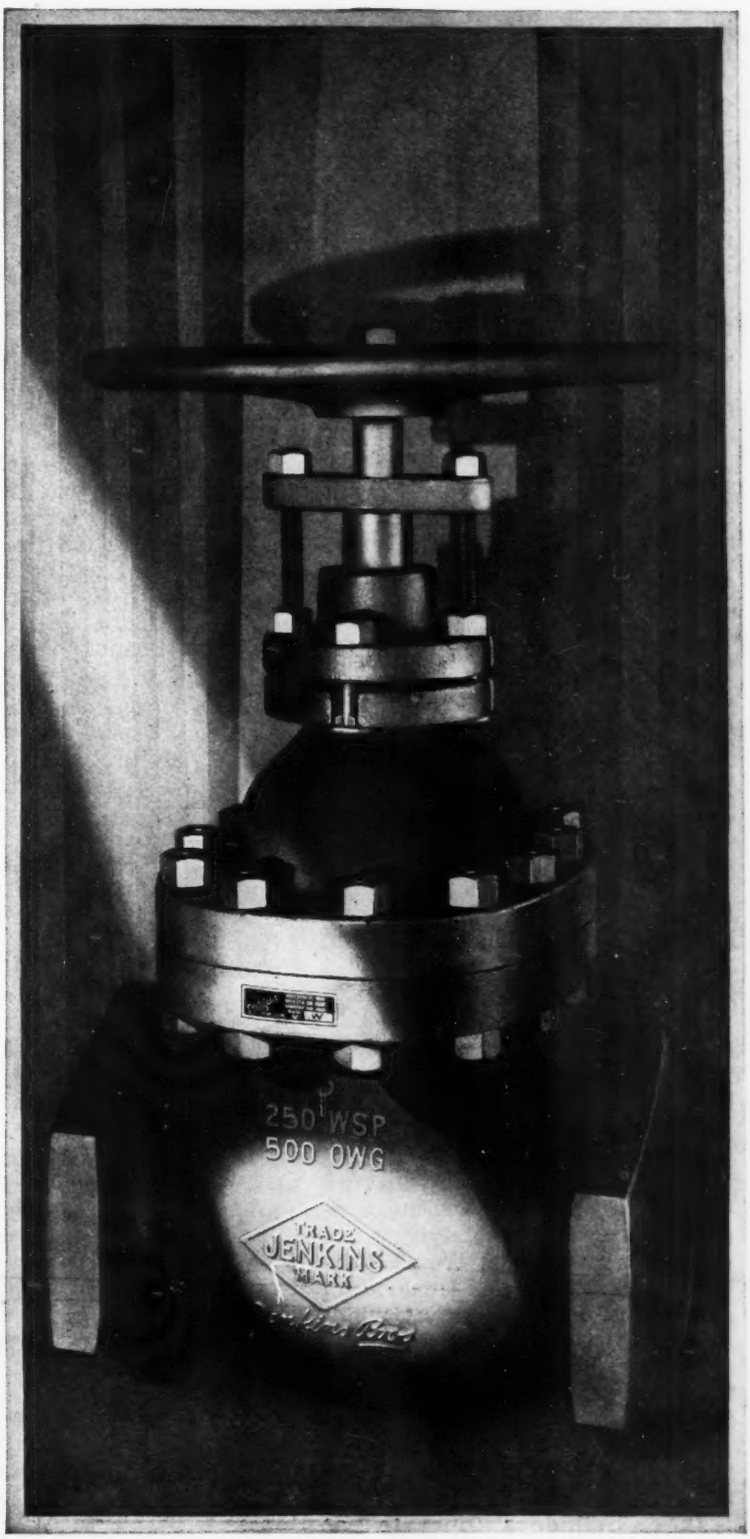

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Standards of antiknock value must be changed from time to time to meet changing conditions; knock testing apparatus and technique must similarly be changed to bring knock ratings into agreement with the changing trends of engine design.

The two variables which have the greatest influence on the relative knock ratings of fuels are temperature and air-fuel ratio. The effects of temperature have been known in a general way for approximately two years but the relation of air-fuel ratio to changing engine design is not so well known.

During the past year or two there has been a definite tendency to increase materially the mixture strength during acceleration and wide-open throttle operation. Larger accelerating pumps have been attached to some carburetors, giving a greatly enriched mixture to insure the maximum power mixture strength in even the leanest cylinder on the coldest day. These carburetor changes have had far reaching influence on the whole problem of knock testing and may ultimately make desirable either changes in the present technique of knock testing or certain additions thereto.

Fig. 3 shows the carburetor characteristics of a recently built engine at 500 r.p.m. as the throttle is opened from idling to the full-open position. It will be noted that when 9.5 horsepower are delivered the average air-fuel ratio is 13.45 while at full throttle operation, where 13 horsepower are produced, the average air-fuel ratio is 10.2.

Fig. 4, Curve 1, shows similar data for the same engine at 1000 r.p.m. Under the conditions of normal driving, the air-fuel ratio is not greatly different from the maximum economy mixture, but at wide-open throttle the average mixture strength is 11.05. When the average mixture strength is 11.0 to 1, faulty distribution probably causes certain cylinders to operate at mixture strength of 10.1 to 1, while the leaner cylinders operate at perhaps 12.0 to 1 air-fuel ratio.

In view of the fact that the maximum knock air-fuel ratio of the average fuel is in excess of 13.0 to 1, it is apparent that engines of the type just described never meter the air-fuel ratio for maximum knock while operating at wide-open throttle and low speed, where detonation is ordinarily produced. It then becomes important to examine the knocking characteristics of fuels at air-fuel ratios richer than those for maximum knock.

Fig. 5 shows curves of knock intensity versus air-fuel ratio and hydrostatic head on the carburetor jet of the Series 30 engine for a number of fuels. It will be noted that the curves have quite different shapes. Lead tetraethyl was added to the fuels which required it to equal 74 octane number at the maximum knock air-fuel ratio. Although each fuel has equal knock intensity at the maximum knock air-fuel ratio, the air-fuel ratio for maximum knock varies with the fuel. By the system of rating now commonly used, the fuels would all be considered as having equal antiknock value.

Obviously the fuels would not have equal antiknock value if burned in an engine whose leanest cylinders operate at 12.0 to 1 air-fuel ratio when detonating. Actually at 12.25 to 1 air-fuel ratio, fuel (9) required 1.0 cc. lead tetraethyl to equal fuel (1). The 74 octane number heptane-octane blend has relatively high knocking tendency at rich mixtures. Figs. 6 and 7 show similar curves for other fuels, all compared with fuel (1). The marked relative inferiority of the benzol blend of Fig. 7 should be noted.

General conclusions covering the relation of source of crude and refining methods to the relative antiknock value of fuels at rich mixtures can be drawn only after hundreds of fuels of all types have been subjected to tests similar to the above. General trends, however, based on a limited number of preliminary tests seem to indicate that if a knock suppressor is added to different types of fuels in quantities sufficient to give them equal antiknock value at the maximum knock air-fuel ratio, the straight-run California fuels have the best antiknock value at rich mixtures.

The straight-run Mid-continent and Pennsylvania fuels are almost as satisfactory while cracked fuels vary widely in their characteristics. Benzol blends are the most unsatisfactory of any of the commercial fuels when similarly considered. It is hoped that further tests similar to those described above will be carried on in a number of laboratories in the near future.

Fuels which have widely different knocking tendency at rich mixtures, although the same knocking tendency at the maximum knock air-fuel ratio, have been tested in cars known to meter rich mixtures during wide-open throttle low speed operation, the ratings in the cars agreeing quite satisfactorily with the ratings obtained on knock testing engines at mixture ratios of approximately 12.0 to 1. . . .

If the present variation in the carburetor characteristics of engines is present in future powerplants, it is possible that a specification will need to be set up covering the maximum permissible area under the curve of Fig. 8 between the limits of perhaps 12.0 to 1 and 13.25 to 1 air-fuel ratio, in addition to definite antiknock requirements at the maximum knock air-fuel ratio.

Such a specification would require the use of standardized bouncing pin indicators whose

Cubic Centimeters of Lead Tetraethyl Required in a West Texas Cracked Gasoline to Equal 87 Octane No. on the Series 30 Engine

Speed	Full Throttle Compression Pr.	Compression Pr. during Test	Jacket Temp.	Spark Adv. Degrees	C.C. Lead Tetraethyl
600	190	152	300°F.	14	5.2
900	200	175	300°F.	20	10.0
900	200	165	350°F.	20	13.7

absolute as well as relative indications would be correct. Research now in progress indicates that such instruments may possibly be developed.

It should be noted that the air-fuel ratio at which maximum knock occurs is a variable for different fuels. For average motor car use, those fuels are superior which produce maximum knock at the leaner mixtures.

Aviation Fuels

Since the establishment of definite engine conditions by the U. S. Army Air Corps for use in connection with the rating of aviation fuels, extensive tests of fuels in multi-cylinder aircraft engines have indicated that the single cylinder test conditions originally chosen do not depreciate sufficiently the antiknock value of benzol and certain cracked gasoline. It is now known that increases in test engine speed and jacket temperature result in marked depreciation of such fuels as shown in the accompanying table.

Refiners Problems

The antiknock problem has figured largely during the last few years in the economics of gasoline production. Variations in the shape of the curve of knock intensity versus octane number introduce another factor into the accounting. It is believed that refiners will find it profitable to study carefully the products of different refining processes in order that blends may be used which assure the greatest overall antiknock value at the least possible cost.

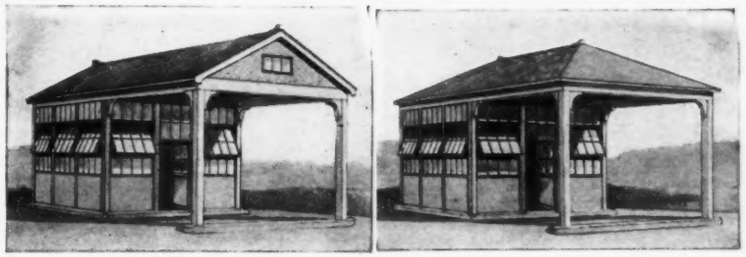
A study of the antiknock value of stocks of aviation volatility at high engine temperature should prepare refiners to meet the demand for aviation fuels of superior antiknock value which is certain to arise as the economics of aircraft operation become better understood.

The Edward Valve & Mfg. Co., East Chicago, Ind., manufacturer of valves for high pressures and high temperatures, has appointed Bell & Eiss, Inc., Minneapolis, as its representative in the Twin Cities territory.

COMPLETE BULK PLANTS
STORAGE TANKS
UNDERGROUND TANKS
LOADING CANOPIES

FILLING STATION BUILDINGS
GREASE RACKS
BRASS VALVES

AIR COMPRESSORS
GASOLINE PUMPS
STEEL BUILDINGS
TANK PAINT
GENERAL PLATE WORK



ALL-STEEL FILLING STATIONS

Oil companies are enthusiastic over these Birtank all-steel filling station buildings.

Low in cost, neat and attractive in appearance, substantially designed and easy to erect, these Birtank stations meet every requirement. The all-steel construction reduces fire hazard and gives 100% salvage value in case of removal to a different location. Ample window space gives maximum light and ventilation.

Erected in the field by ordinary labor, no skilled workmen required, all field connections bolted. Write for additional information and prices.

Sales Offices: Birmingham, Tulsa, Tampa, Charlotte, Verona, Pa., New York, Atlanta, New Orleans, Jackson, Miss.

Birtanks Are The Standard Of Quality

BIRMINGHAM TANK COMPANY
PLANTS: Birmingham, Ala.
Verona, Pa. (Pittsburgh, Dist.)

AN INGALLS BIRTANK PRODUCT

Birmingham Tank
OIL & GASOLINE DISTRIBUTION EQUIPMENT

Carbondale Refrigeration
for Refiners

CARMACO

Send for a Copy of our Wax Plant Bulletin

Design of Complete Wax Plants—Absorption and Compression Refrigerating Machines—Wax Distillate Chilling Machines—High Pressure Filter Presses—Paraffine Wax Sweaters—Heat Exchangers and other Refinery Equipment.

CARBONDALE MACHINE COMPANY, CARBONDALE, PA.
SALES OFFICES
New York Los Angeles Buffalo Chicago Pittsburgh Tulsa Kansas City Philadelphia Boston

Get off to a **GREAT START** *with*

MARATHON
ETHYL GASOLINE

Spring is a good season to start in with Marathon Gasoline, both regular and Ethyl. Be well established under the sign of the Marathon Runner when summer business sets in.

Don't delay and be forced to share your customers with other dealers because of supplying them only ordinary gasoline. Keep them for yourself—by supplying Marathon Ethyl Gasoline.

Those who are daily building business with Marathon Ethyl Gasoline GUARANTEE their customers UNIFORMITY. They know Marathon Ethyl will be the same high quality gasoline tomorrow as it is today, as it was yesterday, last month, last year. Customers always come back for more. Refined from selected paraffin base crude, it flashes instantly to life at the first nudge of of the starter. Get set today for a long run of good business. Change to Marathon Ethyl Gasoline.

MARATHON OIL CO

General Offices: Thompson Building, Tulsa, Oklahoma

DISTRICT OFFICES:
Del Rio and Ft. Worth, Texas
Atlanta, Georgia
Little Rock, Arkansas
Sioux City, Iowa

REFINERY LOCATIONS:
Bristow, Oklahoma
Boynton, Oklahoma
Del Rio, Texas
Ft. Worth, Texas

MARATHON
OTHER MARATHON PRODUCTS ARE:

U. S. Specification Gasoline
41-43 Water-white Kerosene
Bright Stock
Cylinder Stock
Fuel Oils
Neutrals
Distillates
Marathon Wax
Diesel Engine Oils
Compounded Motor Oils
High Anti-Knock Value Naptha

Combination Brings New Customers To One-Stop Stations

By E. L. Barringer
N. P. N. STAFF WRITER

ATLANTA, Ga.

TIRE company one-stop stations in Atlanta are attracting customers by offering combinations. A few services are grouped together and sold at a flat price for a definite period of time.

These combinations are presented to induce customers into the station. It is the same merchandising principle used by other types of retail stores with their "specials."

After the customer is brought into the station by the combination offer, there is an opportunity to sell additional merchandise or service.

One Atlanta tire station, for instance, offered a complete lubrication job, with spring spray, inspection of transmission and differential, battery water, and vacuum cleaning of the car interior, for one day only at 85 cents.

Thirty-one customers bought the special. But the average sale per customer was not the 85 cents—salesmanship moved the average for these 31 customers to between $3.50 and $4.

Even if the customer buys only the special the combination has accomplished its purpose. The customer has been introduced to the station. When he needs other merchandise or service he may return.

These combination offers are aimed also at the customers of the vacant lot car washing and greasing stations. Atlanta has many stations of this type, charging from 50 cents upwards for a grease or wash job.

Since lubrication or car washing is the principle item in these combinations the one-stop stations come in direct competition with the chief stock in trade of the vacant lot stations. These combinations also reach the customer for a service needed frequently but one that is apt to be neglected.

The combination creates business instead of diverting it. It does not affect the customer's demand for the main goods sold by the one-stop stations. Gasoline, motor oil, tires, batteries, accessories must be purchased regardless of price, but an auto will operate in spite of its need for washing or greasing.

On the surface the combination looks like a bargain, but the customer is not getting as much as he thinks he is. A recent combination illustrates the point.

For a week car washing and greasing amounting to $5 at regular prices could be purchased for $3.30 at one of the tire company stations. The advertisement listed the items in the combination and the usual price. These prices added up to $5 all right, so the customer got a $1.70 reduction. Actually 15 per cent of that $3.30 was profit to the station, however.

The station that offered the 85-cent lubrication combination handled all the 31 customers without any added expense. Employes had to be at the station, the equipment and space were there, so it was more profitable to merchandise lubrication at 85 cents than to leave the investment in man power and equipment idle. It was especially profitable when the

Special!
All This Week
$5.00 Job
$3.30
includes
$1.00 Wash, $1.50 Duco Polish, 25c
Vaccum Cleaning, 75c Top Dressing,
$1.25 Alemiting, 25c Spring Spray
A full five-dollar job, all for $3.30 . . . a good wash . . . a Duco polish . . . a two-coat top dressing . . . a graphite oil spring spray . . . a complete alemiting . . . a vacuum cleaning . . . puts your car in good-looking and good-running shape! Get yours today!
Firestone
WAlnut 8628
Service Stores, Inc.
Baker St.
Spring St.
SERVICE

The newspaper advertisement for a combination at Firestone's one-stop station in Atlanta. The ad is 3 columns wide by 9 inches high

85-cent customer left from $3.50 to $4 in the cash register.

This 85-cent combination was offered by the Dobbs Tire Co., Goodyear tire distributors, with nine one-stop stations in Atlanta. Salesmanship by the service man was responsible for running up the average sale from 85 cents to $3.50 to $4.

The 31 customers drove to the station that day to buy the combination. For 85 cents they received a chassis lubrication, spring spray, vacuum cleaning of the interior of the car, an inspection of the transmission and differential, and battery water.

Many of these customers were sold other goods, such as crankcase drains, accessories, and wash jobs. One customer bought the combination, and a set of six spark plugs, a fan belt, and an oil filter. His bill was slightly over $11.

This combination was offered for one day only in January. It was repeated the following week, for one day. The same offer probably will not be made again for three or four months.

Frequent repetition of a combination reduces its effectiveness, believes the manager of the station. Regular customers will resent paying the full price, and will hold off until the combination is offered again. The manager believes that best results are obtained by careful scheduling of the combination, not only at your own station but also with those offered by competitors.

The Dobbs Tire Co. had an experience with merchandising accessories last November that is leading to a more aggressive policy with these goods. The Goodyear company purchased a quantity of automobile seat covers last fall, and 200 were sent to Atlanta.

The covers arrived in November, and the season for seat covers had closed several months previous. Instead of putting a price on the covers had hoping they would sell, the company decided to move them quickly, and get out its money.

Covers for coupes were priced at 95 cents a pair, for two door sedans $1.25. The gross profit was 45 cents a pair.

A small space in the regular tire newspaper advertisement that evening announced the special selling of seat covers the following day. By 8:30 the next morning every cover had been sold. The experience showed the management that there is a profit in accessories, such as seat covers, if a little salesmanship is used in pushing the merchandise.

The Goodrich tire one-stop station also offers combinations. On a recent week-end it offered to wash and polish the auto, clean and paint the top, vacuum clean the inside, and check the battery for $2.35.

Firestone's one-stop station in Atlanta has been the most aggressive combination merchandiser. Three combinations are used. Each runs for a week. These will be offered for three consecutive weeks. There will be several weeks of rest, then they are offered again.

Two of these specials are on mechanical work. The third is for washing and greasing. The advertisements list the items offered and shows the regular prices.

For $3.25 the station offers a regular $5.25 job on carbon removing, brake adjusting, and lubrication, as one special. The items, with regular prices, are: carbon removing $1.75, brake adjusting $2, greasing $1.25, spring spray 25 cents.

Another combination is a tightening job. This includes complete tightening of all body bolts, the stopping of all squeaks, complete inspection of all ignition wires, testing and adjusting headlights, and a grease job with spring spray. For small cars this work is done regularly at $5.75 but for the special it is $4.40. Medium cars receive $8 worth of work for $5.40. And large cars $9 worth for $6.40.

The third combination is a $5 washing and greasing job for $3.30. The items are washing $1, Duco polish $1.50, vacuum cleaning 25 cents, top dressing 75 cents, greasing $1.25, and spring spray 25 cents.

The management estimates that about 80 per cent of the customers buying these specials are new ones or shoppers. But the combination does its work by bringing new customers into the station who some day may become regular patrons.

NEW EQUIPMENT

Owens-Illinois Glass Co., Toledo, O., has off the press a hansomely bound, black and silver-covered catalog which it describes as an encyclopedia, text-book and catalog of glass containers.

In its 500 pages are described and illustrated in many attractive colors hundreds of bottles and jars in many shapes, designs and sizes, including oil sample bottles and other glass containers for oils.

Added salability of a product through new and attractive containers is one of the aims of the company's New Uses and Research Division, which it places at the disposal of customers and prospects to assist them in packing their products more attractively. This department is comprised of artists who create new designs, re-designs old packages, add a colorful label or carton to a container, and generally put "eye appeal" into the package, with due consideration to practical limitations.

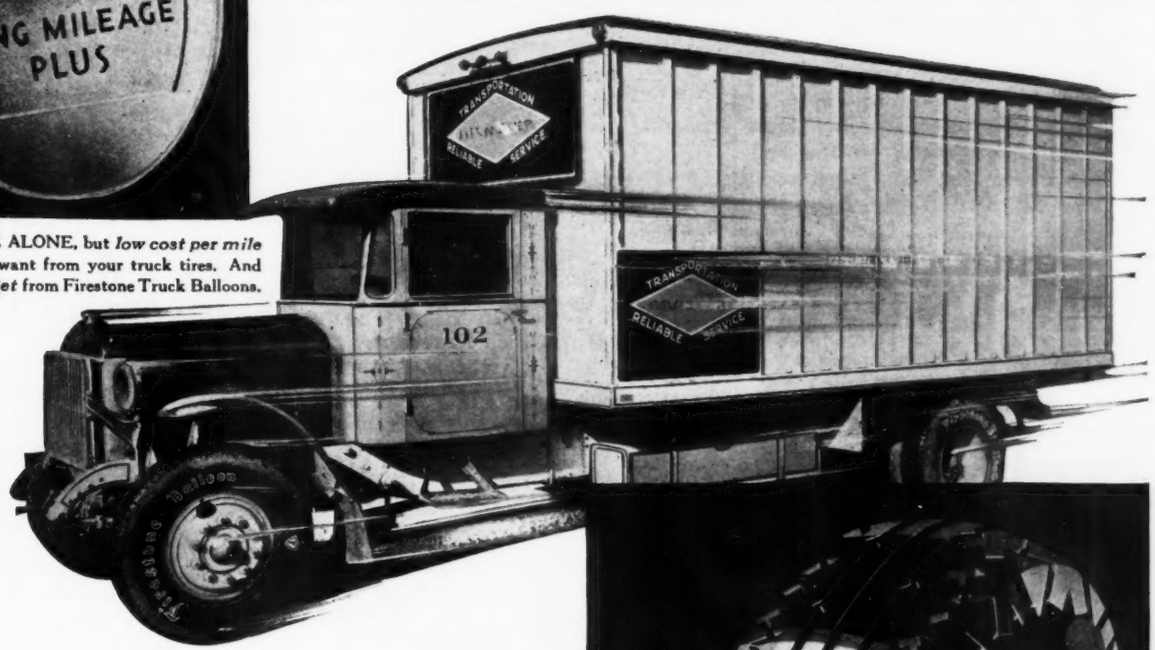
The catalog devotes several pages to the history and development of glass-making, up to present-day trends and tendencies.

* * *

Huffman Mfg. Co., Dayton, O., has issued a new catalog showing its line of dispensing equipment, Holston valves and fittings, and WMW fittings. The Huffman line includes fill boxes, lock fill caps, vented fill caps, hose connectors and couplings, foot and line valves, line strainers, hoze nozzles, sight glasses, vent headers, tank car unloading couplings, tank car grounding clamps, and funnels, measures, bottles, bottle display racks, cans, oilers, and other tools for use around bulk and service stations.

TRUCK MONEY GOES *FURTHER* ON FIRESTONES

NOT MILEAGE ALONE, but *low cost per mile* that's what you want from your truck tires. And that's what you *get* from Firestone Truck Balloons.



That investment of yours in trucks—are you getting the most out of it? In mileage? In low cost per mile? In less wear and tear on the vehicle itself?

If you're not *SURE,* it will take only a few minutes of your time to find out. And may be worth many dollars.

Simply see your Firestone Dealer. He'll tell you if you can profit by changing to Firestone Truck Balloons. He'll give you exact types and costs. You can see for yourself!

Specify Firestone Tires, Firestone Puncture-Proof Tubes, and Firestone Rims when purchasing new equipment.

Firestone

TRUCK BALLOONS

BATTERIES ▪ BRAKE LINING ▪ RIMS ▪ ACCESSORIES

Reinforced Folio

362—A very compact folio, having three pockets. Made from the best grade smooth black cowhide. Stiffened bottom reinforced with metal studs. Case contains six 4-oz. bottles and five grease jars. Two inner cases may be carried.

Less 10% for Cash

Other styles in our FREE Catalog

L-U-C-E

Builders of Sales Luggage

614 Delaware, KANSAS CITY, MO.

LEADER

STEEL

DRAIN RACKS

The sturdy construction of these Steel Drain Racks makes them perfectly safe for even the heaviest cars and light trucks. The prices make them easy to own. They soon pay for themselves.

Two Sizes:

No. 616—24″ high $62.50
(or $15.65 Down; $8.50 each month for 6 months.)

No. 626—30″ high $73.00
(or $18.25 Down; $9.90 each month for 6 months.)

F. O. B. Decatur, Illinois

Order now or write for further description. Prompt Shipments.

LEADER IRON WORKS, Inc.

2112 N. JASPER STREET
DECATUR, ILLINOIS

ON THE LAZY BENCH

Good Morning to You

A firm of solicitors rang up a stock broker and the following conversation took place:

"Good morning. Are you Mr. Denman?"

"Yes. Who is that?"

"This is Mr. Huylet, Craftling, Studge, Minariddl, Gowle and Scarrow."

"Oh, good morning, good morning, good morning, good morning, good morning and good morning."

—The Diamond
Mid-Continent Petroleum Corp.

* * *

He Believes in Signs

She: "What would you do if I should cry?"

He: "Hang out a sign 'Wet paint.' "

—Magnolia Oil News.
Magnolia Petroleum Co.

* * *

Service Station Attendant: "Shall I check your oil?"

Patron: "No, I'll take it with me."

—Independent Topics

* * *

"Look at that fellow drive!"

"Yeah! He's hurrying to get that latest model car home before it becomes obsolete."

—Arknatco

* * *

A Diplomat

The admiral, who was conducting an examination for the navy, was addressing one of the candidates.

"Who, in your opinion, are the three greatest sailors in British history?" he asked.

"I'm sorry, sir, I didn't catch your name when I entered the room," replied the student, "but the other two are Nelson and Drake."

—The Diamond
Mid-Continent Petroleum Corp.

* * *

"Is that all the work you can do in an hour?" asked Sam's new employer.

"Well, boss," said Sam, "I dussay I could do moh'—but I nevah was one for showing off." *—Magnolia Oil News*
Magnolia Petroleum Co.

Wife—John, is it true that money talks?

Husband—That's what they say, my dear.

Wife—Well, I wish you'd leave a little here to talk to me during the day. I get so lonely.

—Independent Topics

* * *

Tickets, Please

An elderly lady walked into a railroad ticket office at Chicago and asked for a ticket to New York.

"Do you wish to go by Buffalo?" asked the ticket agent.

"Certainly not!" she replied. "By train, if you please."

—The Diamond
Mid-Continent Petroleum Corp.

* * *

Boss: "Rufus, did you go to your lodge meeting last night?"

Rufus: "Nah suh. We dun have to pos'pone it."

Boss: "How is that?"

Rufus: "De Grand All-Powerful Invincible Most Supreme Unconquerable Potentate dun got beat up by his wife." *—Magnolia Oil News*
Magnolia Petroleum Co.

* * *

So, Over He Went

An Englishman on a visit to the West decided to go horseback riding. The hostler who was to attend him asked. "Do you prefer an English saddle or a Western?"

"What's the difference?" he asked.

"The Western saddle has a horn," replied the attendant.

"I don't think I'll need the horn," said the Englishman. "I don't intend to ride in heavy traffic."

—The Diamond
Mid-Continent Petroleum Corp.

* * *

"Late again, O'Malley!" roared the foreman. "How do you account for this persistent tardiness?"

" 'Tis inherited, sir," answered O'Malley. "Me father was the late Michael O'Malley."

—Independent Topics

The main one-stop station of the Stewart Oil Co., Macon, Ga. H. C. Stewart, the proprietor, is standing at the right of the pump island

Marketer Quits Jobbing to Retail At Two One-Stop Stations

By E. L. Barringer

N. P. N. STAFF WRITER

MACON, Ga.

IF YOU go to the office at the main station of the Stewart Oil Co. here and ask for the proprietor, H. C. Stewart, you will be directed to "that man out there on the drive talking to that customer."

Mr. Stewart will be found on the drive, or in one of the service departments, when at the station, for about 12 hours every day. He stays at the station because he is a retailer of automotive service, giving personal attention to his business.

About ten years ago Mr. Stewart became an oil man in Macon. As is customary he was a jobber as well as a retailer. But the jobbing side of the business was distasteful because it required too many "free" gifts to make sales—free air compressors, free pumps, free paint and other free items.

Consequently, Mr. Stewart withdrew from the jobbing business before many months and put all of his effort in retailing.

The company had four stations when this decision was reached. Later the number was reduced by culling out those showing the least profit. Two were retained.

The main station is in the business district, a one-stop station with gasoline, oils, lubrication, tires, batteries, car washing, and accessories. The other station is near the edge of the city. It handles all the goods of a one-stop station also, but carries a smaller stock obtained from the main outlet.

Mr. Stewart makes his oil business profitable by watching both ends of his merchandise. By staying at his main station he comes in personal contact with his customers, and also personally supervises the work. Friendship is the most important business builder in the old South.

Merchandise is purchased when the market is near bottom. The bulk plant is still operated for storage of goods sold at the stations. When the spot market looks favorable Mr. Stewart makes his purchase. Since the plant will store 500,000 gallons of gasoline he fills up and the supply lasts for about six months.

Considerable polish is used at the station, and every time a workman shines up fenders Mr. Stewart sees a profit, for material to shine fenders on about eight autos costs but a few cents, most of the charge being for labor.

When enamel was used no longer for painting auto bodies considerable polish was left on the market without a home. Mr. Stewart found a supply of good enamel polish and bought it all, at 5 cents a bottle, for use on fenders.

An oil side line with Mr. Stewart is the county's business. He rents bulk storage space for the county's gasoline purchases and delivers it. In return he receives a rental fee, and the county purchases all its greases and lubricating oils from the Stewart Oil Co. Considerable real estate is owned by Mr. Stewart in Macon, and he operates a farm near the city.

By concentrating his efforts

in retailing Mr. Stewart believes he has made more profit than as if he were operating a jobbing business. He points out his escape from investments in equipment at dealer stations, and the credit risks in jobbing gasoline.

He stays at the main station constantly to keep in contact with his business. The other station is run by a manager.

Mr. Stewart pushes the gasoline, oil, lubrication, and car washing departments at his stations. These departments, he has found, are the most profitable, since their services or merchandise are needed frequently.

Tires, batteries, and accessories, on the other hand, are purchased less frequently. And with the national user's discount for big commercial accounts on tires and batteries, and the bargaining with the individual car owner because he has a relative or friend who can get him a discount, these lines are also less profitable.

In fact Mr. Stewart, is a distributor for a nationally advertised tire, but, on account of the credit risk in selling dealers, he has concentrated his tire sales direct to consumers through his stations.

Rims and parts are sold through the stations also, and produce a good profit. Defective rims will be reflected in frequent blowouts or worn tires, and the profit from many tire sales is increased by the price of a set of rims.

Although Mr. Stewart has escaped the giving of free equipment and other inducements by withdrawing from jobbing gasoline he still has to compete with the discount in retailing. So he has placed a discount of 2 cents a gallon on all charge account sales.

The posted price is charged on all sales, cash or credit. When statements are issued a discount of 2 cents is granted if the bill is paid before the tenth of the month when due. This rule applies to all accounts, to individual car owners as well as commercial customers.

Discounts are granted liberally in southern states, so this policy was adopted to place discounts on a definite basis. It is estimated by another Macon jobber, that half the gasoline sold in the city moves below the posted price.

The site of the Stewart Oil Co.'s main station has been in the family for many generations. About a hundred years ago the family built a house on the corner. During Reconstruction days it passed out of the family. Later the family repurchased the site.

The present station was built on the front of an old livery barn. This part now is used for car storage. The office was built in front, behind the gasoline pump island. Along the blind side of the front are the lifts for greasing and washing. Above these departments the second floor is rented to a sign company. Adjoining this office, on the second floor also, is storage space for tires and rims.

Marketer Handles Gasoline For Planters' Co-Op

GREENVILLE, Miss. A CO-OPERATIVE association was organized here among cotton planters to collectively purchase gasoline for agricultural purposes with a local oil company acting as agent for storing and delivering.

The Goyer Co., local jobbing company, as the agent will store gasoline purchased by the association at its bulk plant. Farmers will be provided by the oil company with storage tanks. Gasoline will be delivered, in minimum loads of 200 gallons, for cash at the price set by the association. For this service the Goyer Co. will receive 3½ cents a gallon.

Cotton planters seek to avoid payment of the state 5-cent gasoline tax through the association. Mississippi does not grant a refund on gasoline used for agricultural purposes except as it is purchased out of the state direct by the consumer.

The association also seeks to forestall the contemplated organization of a farmers' co-operative oil company operating its own bulk plant and distributing facilities.

For its part the oil company receives 3½ cents on its bulk plant and tank truck operations with the association's gasoline, without the work of purchasing or the responsibility for credits.

Charter members of the group have named it the Delta Planters' Co-operative Association. About 200 planters are expected to join. Other associations may be formed in this territory.

In making application to the association a planter agrees to purchase all of his motor fuel used for farming from the association for one year. He agrees also to pay cash on delivery, and to order not less than 200 gallons at one time.

The planter pledges that gasoline purchased from the association will not be used in motor vehicles on the highway, nor resold for any purpose.

The officials are directed to purchase gasoline in tank car lots, and to obtain an agent to store and deliver it. In purchasing gasoline directors may obtain a brokerage fee from the refiner, this fee to be used in meeting association expenses.

Officials are to set the price to be paid by members for the gasoline. This price is to be the cost plus handling charges of the agent. The association is a non-profit organization.

The membership fee is $2.50, but this may be waived by the directors.

The contract with the Goyer Co., as an agent for the association, provides that the oil company will unload promptly gasoline purchased by the association. The oil company will set aside proper storage facilities at its plant.

For storage on plantations the oil company is purchasing a 270-gallon tank with a one-

Keeps station floors tidy

THE use of gasoline and other solvents for cleaning filling station driveways and concrete floors is both costly and dangerous.

Do this work the Oakite way and you will do it safely and inexpensively as one California marketer recently discovered. Formerly 150 gallons of gasoline were used each month to remove the grease from the driveway of one of this concern's stations. Now 9c worth of an Oakite material does as much work as 26c worth of gasoline.

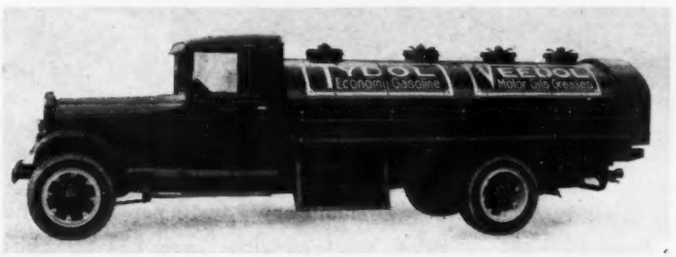
Write for further information on money-saving Oakite methods, or get in touch with our nearest Service Man.

Oakite Service Men, cleaning specialists, are located in leading industrial centers of U. S. and Canada.

Manufactured only by

OAKITE PRODUCTS, INC.
42C Thames St., New York, N Y.

OAKITE
Industrial Cleaning Materials and Methods



OWOSSO

TRUCK AND TRAILER TANKS

"as good as the other jobs you made for us—"

Careful—close supervision of details in manufacturing—turning out Truck and Trailer Tanks that give the utmost in service—brings to us repeat business with comments from buyers such as—"We are well pleased—make these as good as the other jobs you made for us." Owosso has a reputation founded on the basis of service rendered. *May we furnish complete information and quote prices?*

OWOSSO BOILER & WELDING WORKS
Owosso, Michigan

Don't Patch! Use the . . .

"ACE" ELECTRIC TUBE PLATE

for permanent tube repairs

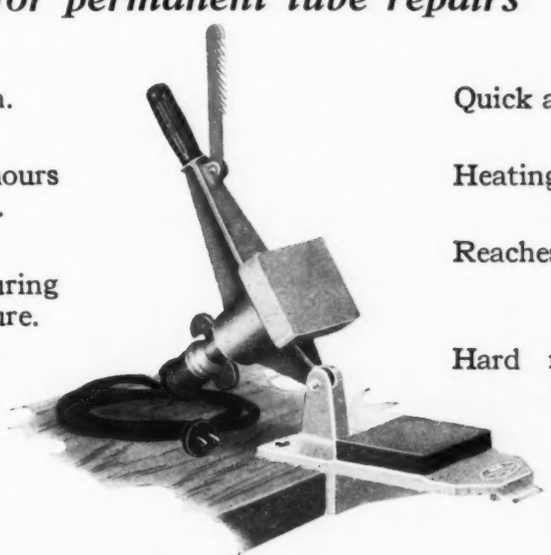
Low current consumption.

"ACE" will operate 10 hours and use but ½ K. W.

Thermostat control, insuring proper curing temperature.

Plugs into any 110 volt A. C. light socket.

Guaranteed for one year.



Quick action clamp.

Heating plate, size 4x3".

Reaches curing temperature in 3 minutes.

Hard rubber block permits equal pressure.

Price $15.00

THE GEWERT MANUFACTURING COMPANY
Reading, Ohio

Write us for

AIR COMPRESSORS
TIRE REPAIR EQUIPMENT
BATTERY EQUIPMENT
HAND TOOLS

HALCO-BRAND
Be Assured-
of maximum quality, workmanship, fit and fair price, ask for Halco Brand Leather Leggings in your specifications for uniform equipment.
Halco Brand Leggings are made by one of the largest and oldest manufacturers in the country, from genuine solid leather to withstand rough wear of deliverymen and yet styled and finished to give the desired swanky appearance to station attendants.
Specify "Halco Brand"—it pays.
The Hagerstown
SHOE & LEGGING COMPANY
WELTS · STITCHDOWNS · MOCCAS · LEGGINGS
Hagerstown, Md. U.S.A.

Day or Night

EDWARDS Globe Signs

Attract Attention!

DAY AND NIGHT your Edwards Illuminated Globes are selling your service . . . in crystal clear colors of vivid light.

Edwards Illuminated Globe Signs are a new achievement! Their genuine ceramic colors are fused in . . . cannot fade. Inserts of double strength. By reason of improved annealing, breakage is reduced. Patented fastener locks insert into place quickly. Two styles, all glass or one piece metal frame.

Write for illustrated circular and particulars.

The Edwards Manufacturing Co.

524-544 Eggleston Ave., Cincinnati, Ohio

Edwards Metal Buildings, Filling Stations, Parking Lot Offices and Sheet Metal Building Materials are standard equipment to leaders of the industry for over thirty years.

gallon pump and hose. This outfit is on skids so it can be taken to any part of the plantation.

Upon orders from members the oil company will deliver the association's gasoline in quantities of 200 gallons or more. The oil company will collect for the delivery at the association's price. For collecting, the association will provide ticket forms.

Each day the oil company will present the cash and sales slips from members to the association. The association secretary will be provided with desk space at the bulk plant.

On the fifth of each month the association will pay the oil company 3½ cents on each gallon of gasoline delivered in the previous month.

The contract is for one year, and renewable unless either party serves notice prior to expiration.

Automatic Filling Scales

CLEVELAND—Toledo Precision Devices, Inc., manufacturers of retail and industrial scales and subsidiary of the Toledo Scale Co., announces a new electric cutoff weighing device.

This device is constructed on the principle of the springless dial scale, with two dials, one on the front and one on the back of the head. The indicator on the back of the head is set at the desired weight. The indicator in front reads zero with no load; as weight is added to the container on the platform the set indicator returns toward zero, while the front indicator advances, indicating the weight at any instant.

An electric "eye" is placed opposite zero, and a slot in front of it is covered by the retreating hand, cutting off the light and setting in action a relay through a contact, which operates a solenoid valve, or any similar cutoff switch.

The manufacturers state that this instrument may be applied to any weighing problem, for automatically measuring definite weights of materials into containers, and may be attached to any form of endless conveyor, filler or packaging machine.

New Stations Building

Note: Material used in this column is taken principally from newspapers. NATIONAL PETROLEUM NEWS assumes no responsibility for its accuracy. Headquarters of companies and addresses of individuals are given wherever possible.

The list as published from week to week cannot be looked upon as indicative of the relative extent to which stations are being built in various parts of the country.

Service Stations

Hardyville, Ky.—Stoll Oil Refining Co., Louisville, Ky.

Elizabethtown, Ky. — Mid-Continent Petroleum Co., Cosden Bldg., Tulsa, Okla.

Burlington, Wis.—Wadhams Oil Co., Milwaukee, Wis.

Rantoul, Ill. — Mrs. Matilda Messinger.

Lorain, O.—Columbia Oil Co., 2890 E. 83 St., Cleveland, O.

Hartford City, Ind.—Thomas Hartley, Washington and Water Sts.

Chicago, Ill.—J. R. O'Connor, 1663 E. 79 St.

Chippewa Falls, Wis. — Harry D. Crawford, 219 West Spring St.

Charles City, Ia.—N. H. Palmer, Court St.

Dubuque, Ia.—Rainbo Oil Co., 598 Central Ave.

Lorain, O.—Columbia Refining Co., 2890 E. 83 St., Cleveland, O.

Brecksville Village, O.—Standard Oil Co., Midland Bk. Bldg., Cleveland, O.

Grand Forks, N. D.—Sullivan Service Oil Co., N. 3rd St. and Skidmore Ave.

Baraboo, Wis.—O. F. Philbrick.

Philadelphia, Pa.—American Oil Co., American Bldg., Baltimore, Md.

Freeport, Ill.—Peerless Oil Co., Indiana, Pa.

Fergus Falls, Minn.—Harry W. Tobin, Ford St. and Lincoln Ave.

Willoughby, O. — Willough Gasoline and Oil Co.

Taylorville, Ill. — Sweeney Oil Co., Peoria.

St. Paul, Minn.—A. L. Overton, 216 Otis Ave.

Fremont, Wis.—Sam Hengun.

Ralston, Okla.—Smith Gasoline Sales Corp.

Kenyon, Minn.—Kenyon Co-operative Oil Co.

Minneapolis, Minn.—E. Y. Arnold, Twin City Bldg., National Exchange.

Riceville, Ia.—Co-operative Oil Co., Osage, Ia.

St. Ansgar, Ia.—Co-operative Oil Co., Osage, Ia.

Charles City, Ia.—Continental Oil Co., Ponca City, Okla.

Davenport, Ia.—Fred Weise, Lillie Ave. and Lombard St.

Merrill, Wis.—Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago.

Superior, Wis. — Northwestern Oil Co., Superior.

Saginaw, Mich.—White Star Refining Co., 903 W. Grand Blvd., Detroit, Mich.

Albion, Mich.—Standard Oil Co., 910 S. Michigan Ave., Chicago, Ill.

Postville, Ia.—R. F. Hecker & Sons.

Minneapolis, Minn.—Firestone Tire & Rubber Co., 444 Stinson Blvd.

Davenport, Ia.—Continental Oil Co., Ponca City, Okla.

Omaha, Neb.—Mac Wondra, 1129 S. 29th, Omaha.

Norwood, Minn.—White Eagle Oil Co., St. Paul, Minn.

Cleveland, O.—Sun Oil Co., Society for Savings Bldg.

St. Paul, Minn.—Frank Schrankler, 289 Maple Ave.

Pauls Valley, Okla.—Continental Oil Co., Ponca City, Okla.

The Motor Most of them Buy

BECAUSE the Leland vapor-resisting motor for gasoline pumps was first in the field several years ago, it took the lead in sales.

Because this pioneer motor in its present form is the most suitable motor ever designed for use around explosive liquids, such early prominence has been maintained without interruption.

The present day acceptance of the Leland vapor-resisting motor rests upon:

Sturdiness of design. Conservative ratings and ample reserve power. Safety features in excess of requirements of National Board of Fire Underwriters. Special Foolproof lubrication system requiring service but once a year. An unusually dependable and long lived short-circuiting device. (All single phase motors.)

Available in all practical ratings. In sleeve-bearing and ball-bearing designs, as required.

A. C. Single Phase Induction *D. C. Compound Wound*
A. C. Polyphase

The Leland Electric Co.
Dayton · Ohio · U.S.A

LELAND ELECTRIC CANADA, Ltd.
7-9 Duke St.
TORONTO, ONTARIO, CANADA

Leland Vapor-Resisting Motors

Here is a
NEW MARKET
FOR YOUR KEROSENE

MIX kerosene with Pyrocide No. 20, and the result is a powerful insecticide, highly effective against flies and other household insects.

Here's an excellent opportunity to boost your kerosene sales. All you have to do is mix one gallon of Pyrocide with 19 gallons of light mineral oil. We guarantee the result will be a uniform spray.

Pyrocide No. 20 is a standardized, highly concentrated extract of pyrethrum flowers, and is now used by many successful manufacturers of household insecticides. With Pyrocide, you can easily increase your profits.

We will furnish the simple directions for making a perfect insecticide. Pyrocide No. 20 is shipped in steel drums of 10, 30, and 53 gallons. Free sample sent upon request.

◆

McLaughlin Gormley King Company

MINNEAPOLIS, MINNESOTA

Established 1901

PYROCIDE No. 20
CONCENTRATED EXTRACT OF PYRETHRUM FLOWERS

SKILLED SUPERVISION
Guarantees the Quality of Gulf Products

COASTAL AND PARAFFINE CRUDES
GASOLINE—LUBRICATING OILS
NAPHTHA—GAS—OILS
WAX—PETROLEUM COKE
CYLINDER—ENGINE—CORDAGE

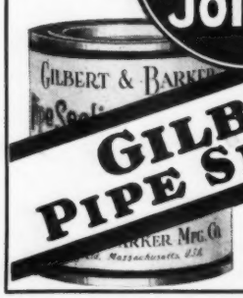
Gulf Refining Company

General Sales Offices:
PITTSBURGH, PA.

District Sales Offices: New York, Boston, Philadelphia, Louisville, Atlanta, Houston, New Orleans

FOR TIGHTER JOINTS

Three Handy Sizes:
⅛ pint 15c
1 pint 75c
1 quart $1.45
(Postage extra)



GILBERT & BARKER PIPE SEALING COMPOUND

Leaks in gasoline pipe lines can be serious. Use Gilbert & Barker Pipe Sealing Compound. Makes every coupling, tee or elbow tight as a weld. No stock losses. No costly overhauling. Approved by Underwriters.

Order direct from
GILBERT & BARKER MFG. COMPANY, SPRINGFIELD, MASS.

Crude Production by Fields

By Telegraph—Daily average gross output, by fields in U. S., for week ending with dates below as compiled by A. P. I.

PRODUCTION SUMMARY

	March 14	March 7
Production east of Rockies	1,662,650	1,633,200
Increase		29,450
Total production in U. S.	2,190,550	2,156,700
Increase		33,850
Crude oil imports	128,145	126,430
Increase		1,715
Total new crude supply	2,318,695	2,283,130
Increase		35,565

OKLAHOMA

	Mar. 14	Mar. 7
Allen Dome	14,850	12,200
Asher	700	700
Asher, West	6,150	7,600
Blackwell	2,850	2,800
Bowlegs	9,250	10,750
Braman	1,950	1,950
Bristow-Slick	12,750	12,750
Burbank	13,650	13,400
Carr City	10,100	11,650
Cromwell	4,850	4,850
Cushing	12,600	12,550
Davenport	900	900
Duncan Dist.	7,450	7,400
Earlsboro	18,200	15,900
Earlsboro, East	17,550	14,200
Earlsboro, So.	7,100	6,450
Fox	1,000	1,000
Garber	3,950	3,900
Graham	3,000	3,000
Healdton	10,600	10,600
Hewitt	6,050	6,050
Hubbard	950	1,000
Konawa	12,650	19,300
Little River	15,700	18,500
Little River, East	7,250	9,550
Logan Co.	4,050	4,050
Maud	2,650	2,100
Mission	4,300	3,550
Oklahoma City	132,800	128,250
Okmulgee, No.	8,850	8,800
Okmulgee, So.	5,350	5,300
Osage (Outside Burbank)	23,000	23,000
Papoose	2,000	2,050
Pearson	500	550
Sasakwa	2,450	3,600
St. Louis	24,350	20,300
Scholem-Alechem	13,700	13,650
Searight	5,750	4,850
Seminole	15,800	12,350
Seminole, East	2,300	1,100
Thomas	600	600
Tonkawa	5,150	5,150
Wewoka	7,600	7,850
Yale-Jennings	7,150	7,150
Others	39,400	38,450
Total, Okla.	509,800	501,650
Increase		8,150

KANSAS

Augusta-Fox Bush	3,000	3,050
Churchill	3,550	3,500
El Dorado-Towanda	12,950	12,900
Florence-Covert	700	700
Greenwood Co.	16,700	16,700
Oxford	2,300	2,300
Peabody-Elbing	1,700	1,700
Rainbow Bend	1,500	1,500
Russell	3,200	3,200
Sedgwick Co.	19,500	20,750
Voshell	19,300	19,650
Others	27,000	26,500
Total, Kans.	111,400	112,450
Decrease		1,050

NORTH LOUISIANA

Caddo, light	7,800	7,950
Caddo, heavy	2,800	2,800
Cotton Valley	1,800	1,800
De Soto and Red River	2,700	2,750
Haynesville	5,700	5,650
Holly	750	600
Homer	3,400	3,400
Sarepta Carterville	1,500	1,600
Urania	4,600	4,600
Zwolle	7,950	8,500
Others	1,500	1,600
Total, N. La.	40,500	41,250
Decrease		750

ARKANSAS

Champagnolle	3,200	3,250
El Dorado	3,800	3,800
Lisbon	800	800
Nevada	1,000	1,000
Smackover, light	4,400	4,450
Smackover, heavy	32,600	32,650
Stephens	850	850
Others	1,750	1,150
Total, Ark.	48,400	47,950
Increase		450

ROCKY MOUNTAIN

Wyoming

Big Muddy	1,950	1,950
Elk Basin	750	700
Grass Creek	2,100	2,100
Labarge	1,700	2,000
Lance Creek	200	200
Lost Soldier	3,750	3,950
Oregon Basin	1,550	1,550
Rock River	2,000	2,050
Salt Creek	24,550	26,550
Others	3,250	3,500
Total, Wyo.	41,800	44,550
Decrease		2,750

Montana

Cat Creek	1,100	1,050
Pondera	1,700	1,600
Sunburst	4,200	4,250
Others	1,400	1,150
Total, Mont.	8,400	8,050
Increase		350

Colorado

Florence	350	400
Fort Collins	1,000	1,000
Moffat (Craig)	1,050	1,050
Others	1,750	1,750
Total, Colo.	4,150	4,200
Decrease		50

New Mexico

Artesia	600	650
Bal. Eddy Co.	150	200
Hobbs High	30,600	29,600
Bal. Lea Co.	6,950	5,350
Hogback	450	450
Rattlesnake	1,050	900
Table Mesa	100	100
Total, N. M.	39,900	37,250
Increase		2,650
Total, Rocky Mountain	94,250	94,050
Increase		200

TEXAS (OUTSIDE GULF COAST)

Panhandle District

Carson Co.	3,500	3,800
Gray Co.	39,600	39,000
Hutchinson Co.	8,700	9,500
Wheeler Co.	300	500
Others	250	250
Total, Panhandle Tex.	52,350	53,050
Decrease		700

North Texas

Archer Co.	11,900	12,500
Burkburnett	7,200	7,550
Electra	8,900	8,700
Iowa Park and K. M. A.	4,700	4,300
Montague-Cooke	5,700	6,250
Wilbarger	10,400	10,100
Young Co., No.	9,300	8,300
Others	1,350	1,800
Total, N. Tex.	59,450	59,500
Decrease		50

West Central Texas

Brown Co.	4,100	4,100
Callahan Co.	2,000	2,000
Coleman Co.	1,100	1,100
Eastland-Desdemona	4,000	4,000
Jack Co.	900	900
Palo Pinto Co.	400	400
Shackleford Co.	4,000	4,000
Stephens Co.	4,600	4,600
Throckmorton Co.	400	500
Young Co., So.	2,600	2,400
Others	1,200	1,200
Total, West Cent. Tex.	25,300	25,200
Increase		100

West Texas

Crane and Upton Cos.	24,600	23,850
Crockett Co.	1,800	1,800
Ector Co.	5,800	5,700
Howard Co.	22,050	21,700
Jones Co.	1,200	1,200
Michell and Scurry Cos.	2,000	1,800
Reagan Co.	25,650	28,050
Winkler Co.	48,700	48,300
Yates	88,850	90,450
Bal. Pecos Co.	3,400	2,600
Others	7,300	7,300
Total W. Tex.	231,350	232,750
Decrease		1,400

East Central Texas

Boggy Creek	2,300	2,400
Corsicana-Powell	4,800	4,800
Currie	300	300
Mexia	3,750	3,800
Nigger Creek	150	150
Richland	100	100
Rusk County: Joiner field	45,800	56,050
Rusk County: Kilgore	29,750	
Gregg Co., Longview	7,150	
Van Zandt	34,900	32,450
Wortham	600	600
Others	50	50
Total, E. Cen. Texas	129,650	100,700
Increase		28,950

Southwest Texas

Chapman Abbot	5,000	5,300
Dale	250	250
Darst Creek	29,550	28,200
Laredo Dist.	13,700	13,700
Luling	9,450	9,600
Lytton Spgs.	750	700
Salt Flat	15,000	15,500
Somerset	1,300	1,300
Others	600	500
Total, So. W. Texas	75,600	75,050
Increase		550
Total, Texas (Outside Gulf Coast)	573,700	546,250
Increase		27,450

GULF COAST

Coastal Texas

Barbers Hill	19,500	20,700
Batson	1,000	1,000
Big Creek	2,600	2,700
Blue Ridge	1,300	1,250
Boling	800	700
Damon Mound	600	650
Esperson	2,400	2,500
Fannett	500	600
Goose Creek	4,550	4,300
Hankamar	2,300	2,300
Hull	6,200	6,200
Humble	8,950	9,300
Moss Bluff	400	200
North Dayton	1,050	600
Orange Co.	1,800	1,900
Orchard	1,900	1,900
Pettus	7,000	6,950
Pierce Junct.	9,900	8,800
Port Neches	1,500	1,500
Raccoon Bend	9,200	9,250
Refugio Co.	31,250	33,100
Saratoga	900	1,100
Somerville	2,300	2,200
Sour Lake	2,000	2,050
So. Liberty	2,600	2,450
Spindletop	11,450	11,700
Sugarland	11,950	11,900
West Columbia	4,250	4,250
Others	2,200	2,000
Total, Coastal Texas	152,350	154,050
Decrease		1,700

Coastal Louisiana

Edgerly	700	750
Evangeline	650	650
Hackberry, E.	2,150	2,450
Hackberry, Old	800	800
Lake Barre	2,700	2,750
Lockport	4,800	4,750
Port Barre	1,800	1,650
Sulphur Dome	1,700	1,750
Vinton	6,500	6,500
White Castle	1,000	1,000
Others	3,300	3,500
Total, Coastal La.	26,100	26,550
Decrease		450
Total, Gulf Coast	178,450	180,600
Decrease		2,150

CALIFORNIA

Dominguez	11,700	11,400
Elwood-Goleta	32,200	33,500
Huntington Beach	22,600	21,800
Inglewood	15,400	15,600
Kettleman Hills	26,600	26,600
Long Beach	90,800	91,000
Midway-Sunset	52,300	52,300
Playa del Rey	29,700	28,900
Santa Fe Spgs.	71,500	71,000
Seal Beach	16,300	16,100
Ventura Ave.	45,300	45,000
Others	113,500	110,300
Total, Calif.	527,900	523,500
Increase		4,400

EASTERN

(Not including Michigan)	97,500	100,000
Decrease		2,500

MICHIGAN

Mt. Pleasant	6,750	6,900
Muskegon	1,750	1,900
Saginaw	150	200
Total Mich.	8,650	9,000
Decrease		350

Compilation Of Mid-Continent Refinery Operations

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Mid-Continent Refinery Operations, Week Ended March 13 (By Telegraph)

	Kansas	Oklahoma	North & Cent. Texas	West Texas	North La.-Ark.	Total Week Ended March 13
Plants Reporting	12	29	25	15	12	93
Da. Av. Cap. (Bbls.)	94,500	161,700	106,100	82,000	77,000	521,300
Da. Cracking Capacity	30,700	52,600	17,200	5,000	22,700	128,200
Da. Av. Crude Runs	57,734 + 21.9	90,965 + 2.7	66,617 + 20.8	24,326 + 6.2	39,698 + 2.2	279,340 + 10.5
Da. Av. Other Oil	6,030 + 20.2	4,408 +108.5	2,832 + 56.0	472 — 18.1	15,821 — 5.5	29,563 + 12.6
GASOLINE—Gallons						
Stocks, March 6	28,094,000	43,897,000	37,284,000	13,512,000	7,403,000	130,190,000
Prod. 3-6 to 3-13	11,169,000 + 12.1	14,584,000 + 18.1	9,052,000 + 15.2	2,257,000 + 5.8	5,115,000 — 7.4	42,177,000 +11.5
Ship. 3-6 to 3-13	10,056,000 — 9.9	13,588,000 — 12.8	7,868,000 — 5.2	3,048,000 + 6.5	5,734,000 + 6.3	40,294,000 — 7.0
Stocks, March 13	29,207,000 + 4.0	44,893,000 + 2.3	38,468,000 + 3.2	12,721,000 — 5.9	6,784,000 — 8.4	132,073,000 + 1.4
Ratio Sales to Prod.	90.0%	93.2%	86.8%	135.0%	112.1%	95.5%
KEROSINE—Gallons						
Stocks, March 6	9,148,000	15,502,000	2,340,000	9,000	439,000	27,438,000
Prod. 3-6 to 3-13	2,023,000 + 25.2	2,019,000 — 0.6	1,520,000 + 39.8	....	178,000 — 35.0	5,740,000 + 14.6
Ship. 3-6 to 3-13	2,218,000 + 8.4	1,617,000 — 15.6	1,228,000 — 0.1	1,000 — 28.6	403,000 + 30.0	5,467,000 — 0.9
Stocks, March 13	8,953,000 — 2.1	15,904,000 + 2.6	2,632,000 + 12.5	8,000 — 11.1	214,000 — 51.3	27,711,000 + 1.0
Ratio Sales to Prod.	109.6%	80.1%	80.8%	.....	226.4%	95.2%
STOVE DISTILLATE—Gallons						
Stocks, March 6	3,401,000	4,816,000	756,000	109,000	17,000	9,099,000
Prod. 3-6 to 3-13	540,000 + 8.0	1,006,000 + 38.6	334,000 + 24.6	15,000 — 53.1	38,000 + 81.0	1,933,000 + 25.0
Ship. 3-6 to 3-13	540,000 — 10.4	1,100,000 + 37.0	346,000 — 19.0	16,000 — 61.0	39,000 + 39.3	2,041,000 + 7.3
Stocks, March 13	3,401,000	4,722,000 — 2.0	744,000 — 1.6	108,000 — 0.9	16,000 — 5.9	8,991,000 — 1.2
Ratio Sales to Prod.	100.0%	109.3%	103.6%	106.7%	102.6%	105.6%
GAS OIL—Gallons						
Stocks, March 6	3,036,000	27,939,000	2,397,000	4,900,000	5,139,000	43,411,000
Prod. 3-6 to 3-13	886,000 + 70.1	1,104,000 — 41.3	721,000 — 31.6	356,000 — 38.8	2,227,000 + 4.0	5,294,000 — 14.3
Ship. 3-6 to 3-13	752,000 + 36.2	1,325,000 — 50.4	431,000 — 54.3	758,000 + 59.6	2,022,000 — 31.6	5,288,000 — 30.4
Stocks, March 13	3,170,000 + 4.4	27,718,000 — 0.8	2,687,000 + 12.1	4,498,000 — 8.2	5,344,000 + 4.0	43,417,000 + 0.01
Ratio Sales to Prod.	84.9%	120.0%	59.8%	212.9%	90.8%	99.9%
FUEL OIL—Gallons						
Stocks, March 6	8,369,000	50,478,000	62,827,000	13,188,000	22,849,000	157,711,000
Prod. 3-6 to 3-13	3,977,000 + 7.9	4,552,000 + 6.8	6,770,000 + 13.3	3,263,000 + 16.5	4,678,000 — 5.9	23,240,000 + 7.2
Ship. 3-6 to 3-13	3,397,000 — 18.3	5,487,000 + 0.4	7,448,000 + 5.0	4,593,000 — 1.3	5,797,000 + 4.4	26,722,000 — 0.7
Stocks, March 13	8,949,000 + 6.9	49,543,000 — 1.9	62,149,000 — 1.1	11,858,000 — 10.1	21,730,000 — 4.9	154,229,000 — 2.2
Ratio Sales to Prod.	85.4%	120.5%	110.0%	140.8%	123.9%	115.0%

Gasoline Produced by Various Methods, Week Ended March 13

	Kansas	% of Total	Oklahoma	% of Total	North & Cent. Texas	% of Total	West Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run	5,724,000	51.2	9,126,000	62.6	6,292,000	69.5	1,850,000	82.0	1,771,000	34.6	24,763,000	58.7
Cracked	4,330,000	38.8	4,441,000	30.5	1,901,000	21.0	302,000	13.4	2,417,000	47.3	13,391,000	31.7
Natural	1,115,000	10.0	1,017,000	6.9	859,000	9.5	105,000	4.6	927,000	18.1	4,023,000	9.6
Total	11,169,000		14,584,000		9,052,000		2,257,000		5,115,000		42,177,000	

+ or — columns are % change over previous week.

Mid-Continent Crude Runs Gain 30,000 Barrels

Staff Special—By Telegraph

TULSA, March 17

GASOLINE production at reporting refineries in the Mid-Continent increased 4,300,000 gallons for the week ended March 13, when crude runs increased 26,500 barrels daily average and other oil charges increased a daily average of 3300 barrels.

Crude runs increased in every district while Kansas, Oklahoma and Texas increased charges of other oils. While crude charges increased in Louisiana and Arkansas, other oil charges were reduced sufficiently to cause a reduction in gasoline output and that district was the only one to show a decrease.

Gasoline shipments dropped 3,000,000 gallons. Kansas lost 9.9 per cent, Oklahoma 12.8 per cent and North Texas 5.2 per cent. West Texas and Louisiana-Arkansas enjoyed an increased demand for gasoline.

Gasoline stocks increased 1,000,000 gallons or 1.4 per cent. West Texas

Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended March 13. Change in stocks figures from Feb. 13.

GASOLINE

	Gallons
Production	169,679,000
Shipments	162,869,000
Net change in stocks	+6,810,000
Ratio sales to production	96.0%

KEROSINE

Production	22,144,000
Shipments	21,049,000
Net change in stocks	+1,095,000
Ratio sales to production	95.1%

STOVE DISTILLATE

Production	7,668,000
Shipments	7,802,000
Net change in stocks	—134,000
Ratio sales to production	101.7%

GAS OIL

Production	21,807,000
Shipments	23,582,000
Net change in stocks	—1,775,000
Ratio sales to production	108.1%

FUEL OIL

Production	96,232,000
Shipments	108,994,000
Net change in stocks	—12,762,000
Ratio sales to production	113.3%

and Louisiana-Arkansas reduced stocks, the former by 5.9 per cent and the latter by 8.4 per cent.

Kerosine production increased 700,000 gallons while shipments were 40,000 gallons lower, causing stocks to increase 270,000 gallons.

Stove distillate output was 25 per cent higher and shipments showed 7.3 per cent increase, causing 1.2 per cent reduction in stocks.

Gas oil stocks were virtually unchanged with production and shipments lower. Fuel oil stocks declined 2.2 per cent.

Stand Against More Taxes Marketers Are Urged

HOUSTON, March 13.—Bulletins urging oil jobbers and marketers to take a strong hand with their state representatives or senators in combating any further taxes on the oil industry, are being sent out to all oil marketers in the state by the Texas Petroleum Marketers Association.

In Texas the state department of agriculture has been sponsoring a bill to levy a 50-cent license fee on gasoline pumps, revenue from which would be used to employ additional oil inspectors, according to reports.

Such fees, to be borne by oil companies, would also cover cost of inspecting scales used by storekeepers, hucksters, and other tradesmen.

L. H. Flinn, managing director and counsel, in a recent bulletin, pointed out such fees would be a burden on the oil industry and the consuming public and that pumps are being adequately inspected by city inspectors.

Crude production in Poland in the first half of 1930 was 2,242,000 barrels.

Crude Price Changes

LOS ANGELES — On March 15 Union Oil Co. of California made a second reduction within the week in prices of California crude. Prices on crude in the Los Angeles basin fields were reduced in amounts ranging up to 34 cents per barrel; in Playa del Rey, from 4 to 5 cents; in San Joaquin Valley and Kettleman Hills, in amounts ranging up to 30 cents, with top price of 60 cents per barrel for 40 and above gravity.

The highest price the Union is paying for crude now is 70 cents for 40 and above in the Los Angeles basin fields. The lowest is 50 cents for crude testing 11 to 13.9 gravity in the San Joaquin Valley.

Last previous change was a cut of from 5 to 80 cents on all California crude, March 10.

(*See also pages 102, 104, 119 and 121*)

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FREEDOM, PA.
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85/90 Viscosity Sharples Bright Stock
100% Pennsylvania Neutrals
600 Steam Refined
650 Steam Refined
600 Flash Steam Refined
630 Flash Steam Refined
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Refinery - Tank Wagon Markets

Refinery Markets Remain Unsettled As Price Recessions Continue

CLEVELAND, March 16

REFINERY markets remained pretty much unsettled last week. Downward revisions in prices continued to be made resulting from the previous week's crude and tank wagon price cuts. Fresh reductions in wholesale and retail prices also were made in Standard territories along the east and west coasts and in the south.

Motor fuels in the Mid-Continent showed but little further reaction to the substantial reduction in crude oil prices in that area, but heavy oils came in for some drastic price cuts. Stocks of these oils were said to be rather large and with the middle west's winter so far having been a remarkably open one and the season about over with, refiners abandoned hopes of preventing a lower level of prices.

Gasoline prices were lower in practically all other districts, however. There were 0.25-cent reductions in the New York harbor and Baltimore markets, 1-cent reductions in California interstate and intrastate markets, and a 0.25-cent recession in Pennsylvania market prices.

Burning oils generally were steady in all markets outside of the Mid-Continent. Gas oil was relatively scarce on the west coast.

Cargo markets were a shade more active. A foreign buyer was inquiring for a cargo of gasoline for April-May lifting at the Gulf and New York buyers were negotiating for several cargoes of U. S. Motor for coastwise shipment.

Cargo prices were down approximately 0.75 cent in California and this attracted considerable interest from eastern buyers. No actual sales were reported, however.

The Pennsylvania lubricating oil market remained tight with prices advancing slightly. Neutral oils were quoted lower in the Mid-Continent as well as several grades of bright stock.

Wax markets were generally unchanged.

Trading More Settled in Chicago Market

Staff Special
CHICAGO, March 14

THE Chicago market was on a more normal basis at the close of the week ended March 14, following the unsettled condition created the previous week by reductions in crude oil and retail gasoline prices. Practically all of the major crude buyers in the country had reduced their prices by March 10 and most of the Chicago trade were of the opinion that business would be more settled following these reductions.

Prices of practically all products were unchanged over the week. Demand for gasoline was reported fairly good by most traders. They said, however, that the bulk of orders were for only a few cars and that most buyers were not inclined to buy for deferred shipment. Motoring in many sections of the middle west was hampered considerably by heavy snows early in the week. Most sellers said this did not slow down tank car buying as much as might have been expected. Reports indicated that many jobbers were keeping very little gasoline in storage and were unable to stay entirely out of the market for any length of time.

Chicago sellers generally made no changes in their gasoline quotations during the week. The general price range for U. S. Motor remained at 3.50 to 3.875 cents. Two refiners, who had sold Motor at 3.50 cents during the fore part of the week, later advanced their prices. On the other hand, there was more U. S. Motor being offered at under 3.50 cents by March 14, although apparently not in sufficiently large quantities to be considered representative of the general market. Jobbers in several sections of the middle west, notably Detroit, were able to buy at under the general price range. Several Detroit buyers said they were offered Indiana and West Texas U. S. Motor at 6.95 cents, delivered, and gasoline from Michigan and Pennsylvania at 6.80 cents, delivered.

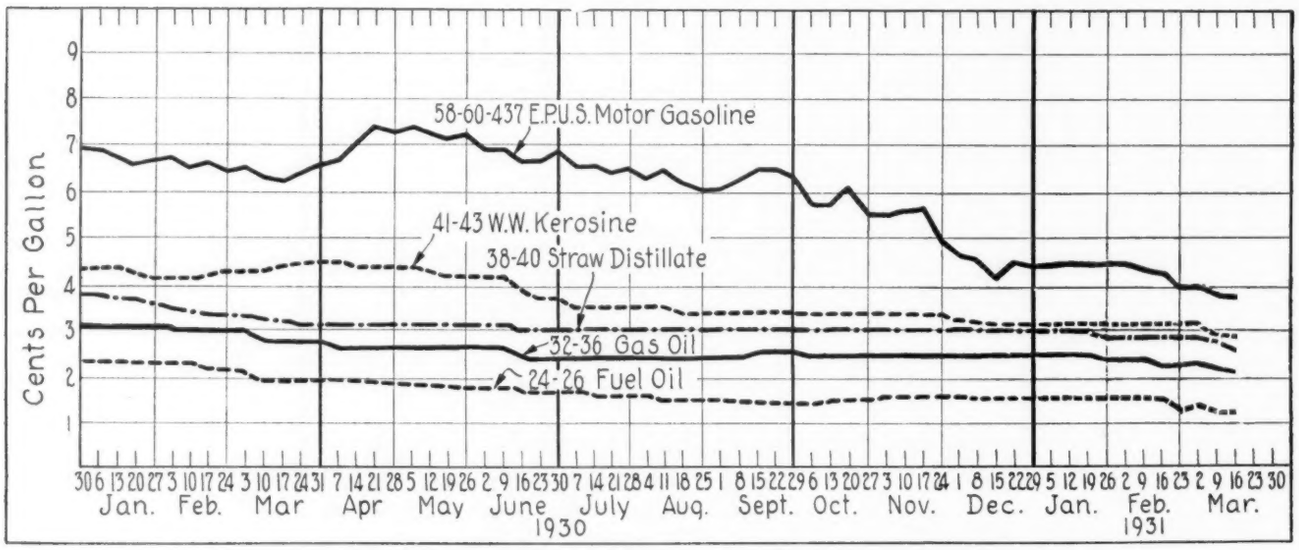
Most Chicago marketers reported they were offered U. S. Motor for resale purposes, at 3.375 cents by refiners in Texas and Oklahoma. A few said they could buy at 3.25 cents, but that full specifications Motor was not freely available at this figure.

Demand for kerosine was reported light in most quarters. Some reaction to the March 5 reduction in retail prices was noted when tank car prices moved down 0.125 cent. Sales of 41-43 w.w. generally were at 2.75 to 3 cents.

Distributors of oil to home burner owners enjoyed a comparatively active business during the first few days of the week, thanks to the heavy snow and cold weather March 7 and 8. Reductions were made recently in tank wagon prices of furnace oils and this also helped buying to some extent. Few changes were noted in the tank car prices of domestic gas and fuel oils. Industrial gas oil prices were off 0.125 cent.

Some rain or snow is likely over the Standard of Indiana territory during the latter half of next week, says the Chicago weather bureau. Moderately cold weather is likely the first half of the week, followed by rising temperatures.

Current Prices of Principal Mid-Continent Refined Products


Cents Per Gallon
58-60-437 E.P.U.S. Motor Gasoline
41-43 W.W. Kerosine
38-40 Straw Distillate
32-36 Gas Oil
24-26 Fuel Oil
Jan. Feb. Mar Apr May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.
1930
1931

Prices shown are in Group 3 basis and extended to date shown in Refinery Market Tables Section of this issue

Crude Price Changes

PITTSBURGH, Pa.—On March 13 Pure Oil Co. reduced Midland, Mich. crude 35 cents, making new price $0.75 per barrel. Last previous change was a 20 cent cut Oct. 28, 1930.

OIL CITY.—On March 10 Joseph Seep Purchasing Agency reduced Corning, O. crude 25 cents, and on March 11, reduced it 10 cents, making new price $0.80 per barrel. Last previous change was a 10 cent cut Dec. 31, 1930.

HOUSTON.—On March 10 Humble Oil & Refining Co. met the Stanolind company's reduction in North Texas, Ranger, Mexia, Powell, Boggy Creek, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona fields, all in Texas.

The reduction was from 12 to 40 cents in these fields.

It also reduced Panhandle Texas crude in amounts ranging from 5 to 17 cents; West Texas crude, in amounts ranging from 15 to 39 cents; south and southwest Texas crude, 15 to 30 cents; and New Mexico crude, 10 to 34 cents.

Gulf Coastal crude and Mirando, Tex. crude remained unchanged.

In the Panhandle, Humble revised its gravity schedule by posting below 35 gravity as its lowest grade. In Gray county, price of this minimum grade is 43 cents, and in Carson and Hutchinson counties, 38 cents. Maximum grade in all counties remains 40 and above, at 55 cents in Gray county, and 50 cents in Carson and Hutchinson. The 2 cent differential for each higher gravity was unchanged.

Pecos and Winkler in West Texas and Lea county, N. M., were posted at 40 cents flat, for all grades.

Crane, Upton, Crockett, Ector, Howard and Glasscock in West Texas were posted at 35 cents flat for all grades.

In southwest Texas, Salt Flat and Darst Creek were both cut 30 cents, making new price $0.60 per barrel.

Pettus, in Bee county, was cut 15 cents, to new price of $0.95 per barrel.

NEW YORK.—On March 10 The Texas Co. met the price reductions of the Stanolind Crude Oil Purchasing Co. in Oklahoma, North and North Central and Central Texas, and extended its reductions into North Louisiana. Its gravity and price schedules are the same as those of the Stanolind company.

The Texas Co. also met Humble's reductions in Gray, Carson and Hutchinson counties of the Texas Panhan-

(*Continued on Page* 104)

Shipments From Southern California

LOS ANGELES, Mar 12—Shipments of bulk petroleum from southern California ports to Foreign and Atlantic Seaboard ports dropped to new low levels for week ended Mar. 7. The total was 781,611 barrels as compared with 941,566 barrels shipped to the same ports the previous week. It marked the second consecutive week in which no shipments were made to Atlantic Foreign ports. Destination and quantity of shipments were as follows:

Destination	Crude	Gasoline	Diesel	Kerosine	Fuel	Total
Pacific For.	2,389	98,526	38,784	27,611	137,078	304,388
Atlantic Dom.	.....	404,448	72,775	.....	.....	477,233
Atlantic For.	.....	.....	.....	.....	.....	.....

Prices 10 Years Ago
March 14, 1921

	Oklahoma	Penna.
58-60 U. S. Motor.....	14.50-15.00c	18.50-18.75c
80-84 Natural	9.00-10.00c	.....
Kerosine (42-43 Okla.; 47 w. w. Pa.)	4.25-4.50c	10.00c
Fuel Oil (24-26 Okla.; 36-40 Pa.)	$0.75-$0.80	4.50-5.00c
Crude (Okla. 35-35.9)	$1.75	$3.00
Chicago tank wagon (no state tax)		23.00c

Prices A Year Ago
March 17, 1930

	Oklahoma	Penna.
58-60 U. S. Motor.....	6.2734c	7.50-7.75c
Grade A Natural.....	5.50c	.....
Kerosine (Okla. 41-43; Pa. 47 w. w.).....	4.25-4.375c	6.50-6.875c
Fuel Oil (Okla. 24-26; Pa. 36-40)	$0.80-$0.85	4.50-4.875c
Crude (Okla. 35-35.9)..	$1.17	$2.75
Chicago tank wagon (including 3c tax)		17.00c

Mid-Continent Refinery Markets

Heavy Oil Prices Turn Downward

Staff Special
TULSA, March 14

BURNING and heating oils, which includes both the gas and fuel oils, have begun to feel the effects of the recent crude oil price reductions in the Mid-Continent.

That was evidenced during the week of March 6 to 14 by the downward drifting of prices in virtually every district of the Mid-Continent. It remained for gasolines alone to exhibit any resistance to the usual after-effects of a crude cut.

Demand the past year for fuel oils had not been what the refiners had hoped for or even expected. The result was a continual piling up of stocks. The low cold test oils were the most active of the grades, and they gave some support to the other oils. The demand for these lower cold test oils has begun to diminish with the approach of milder weather, and even that support was fading fast when the crude prices were cut.

Only those refiners having virtually all their fuel oil output sold under contract to railroads have been in a favorable position for some time, and even now they are in a more favorable position. A majority of railroad contracts carry a minimum of 65 cents a barrel. Even before the recent crude cut, refiners were receiving their 65 cents a barrel, despite the fact that 60 per cent of 36 gravity crude was 57 cents. With the recent cut 60 per cent of the price of that grade of oil amounts to 35.4 cents.

Weather conditions had some effect also on distillates and gas oils as far as demand was concerned, and with stocks increasing in many quarters just as the season was fading it also was inevitable many refiners would want to work off those stocks as soon as possible.

The result the past week was a general reduction in quotations for virtually all grades of distillate and gas oil, and with very little spot business reported at the new price levels.

Kerosines experienced almost the same recessions as did the distillates and gas oils.

The crude cut, as far as gasolines were concerned, apparently has been discounted some time ago. There was the usual unsettled conditions prevailing immediately after the reductions had been announced but by the middle of the week some semblance of stabilization was apparent. By March 14 the opinion was general in this area that prices had virtually reached bottom.

Prices for 58-60 U. S. Motor in most instances ranged from 3.50 cents up in Oklahoma, and quotations from other districts were approximately the same, on a Group 3 freight basis. Some quotations were made as low as 3.375 cents, but apparently were not in sufficient volume to be representative of the market. Marketers paid 3.25 cents for some gasoline, but the bulk of oil at that price originated outside of Oklahoma.

Late in the week buying was reported to have improved somewhat in most districts. It was believed jobbers at last knew just about where they stood, as a result of the lower crude prices and the tank wagon reductions, and accordingly had decided to build up storage somewhat. There was little doubt but that jobbers for many months have operated on extremely low inventories, and the few who had tried to build up stocks for the spring and summer demand had been forced to use that gasoline to supply the current demand due to the open winter in much of the middle west.

With lower prices prevailing for virtually all other major commodities, it is apparent gasolines will have to bear most of the cost burden, and any change for the better in demand for gasolines was expected to result in slightly higher prices within the next few weeks.

All grades of gasoline experienced some slight recessions in prices in line with U. S. Motor.

Natural gasolines experienced no demand of sufficient volume to check the downward trend in prices. None of the major buyers appeared interested, and the bulk of shipments were against contracts. One or two buyers were reported to have been in the market for small quantities for storage at Gulf terminals, but the volume sought was not large.

Quotations for grade AA March 14 moved to 2.75 cents a gallon, with quotations for the lower grades down to 2.25 cents and up.

A few changes were made in quotations for neutral oils as a result of the crude price reductions. Demand was reported comparatively light by most manufacturers.

Bright stock quotations also were reduced slightly by one or two manufacturers. The reductions were made primarily on oils of 20 to 25 cold test. Two offers were made late in the week of 15 cents for 150-160 vis. 210 D bright stock, 20 to 25 cold test.

Wax was unchanged with demand reported light.

Inter-State Oil Adds to Staff

KANSAS CITY—Two new additions to the sales staff of Inter-State Oil Co., lubricating oil compounder here, include Earl Van Buskirk, formerly for 10 years with the Butler Mfg. Co., and William H. Kaths, who formerly handled jobber business for the Pennsylvania Petroleum Co. Mr. Kaths will have headquarters at Lincoln, Neb.

Both are well known in southwestern and western oil trade, according to B. G. Shepard, president.

Correction

In an article in its March 11 issue, page 32A, describing the introduction of new Veedol oils by Tide Water Oil Co., the following statement appeared: ". . . . This indicates a price of 25 cents a quart in the east and 30 cents a quart in the west."

"This statement is without authorization and contrary to fact," says J. D. Collins, assistant general sales manager. "The retail price of the new 100% Pennsylvania Veedol is 30 cents per quart in the east and in certain sections of the mid-west. It is necessarily 35 cents per quart on the Pacific coast and in a few other far flung freight zones. There has been no increase in the trade price with the introduction of the new improved Veedols. Furthermore, no increase is contemplated."

Pure to Install Two Stabilizer Plants

CLEVELAND, March 16.—Pure Oil Co. has placed an order with the Foster Wheeler Corp. covering the fabrication and erection of two complete absorption and stabilizer plants. One is to be built at Marcus Hook, Pa., and the other at Smith's Bluff, Texas.

The Marcus Hook plant will handle six million cubic feet of gas per day at 65 pounds pressure and five million cubic feet at 35 pounds pressure. The Smith's Bluff plant will handle eight million cubic feet daily at 65 pounds and five million cubic feet at 35 pounds.

Comparative Prices of 58-60 U. S. Motor Gasoline, 437 E. P., Group 3 and Point of Origin, to Jobbers Only

In Effect March 16

	Price F.O.B. Group 3	*Price F.O.B. Point of Origin*	*If for Particular Destination*
Oklahoma	3.50 –4.00	3.50 –4.00	
Kansas	3.625–3.75		S. O. Neb. & Indiana Territories, etc.
Kansas		3.875–4.125	Kansas only.
North Texas	3.50 –3.75	3.50 –3.75	
West Texas	3.50 –3.75	3.50 –3.75	
Louisiana-Arkansas	3.625–3.75		Michigan, Ohio and Indiana.
Louisiana-Arkansas		4.00	State or differential haul.
Indiana-Illinois	3.50–4.25	*	S. O. Indiana territory except Detroit and vicinity. For Ohio on delivered basis only.

*Shipments made from Indiana and Illinois refineries, according to conditions and freight rates; no prices F. O. B. point of origin can be given.

Chicago Tank Car Market

CHICAGO, March 14

THE Chicago market was back on a more normal basis the past week, following the unsettled condition created the previous week by reductions in crude oil and retail gasoline prices. Tank car gasoline buying was reported fairly good by most sellers, despite the heavy snowfall over most of the middle west. The price range of U. S. Motor gasoline for shipment to most points in the Standard of Indiana territory remained at 3.50 to 3.875 cents; some sales were reported at 3.375 cents. A number of Detroit buyers said they were offered West Texas and Indiana U. S. Motor at 6.95 cents, delivered, and gasoline from Michigan and western Pennsylvania at 6.80 cents, delivered.

Following prices represent majority of sales made on Group 3 freight basis, although shipments may originate in other refining districts, such as North and West Texas, Arkansas, Louisiana, Indiana, Illinois, Kentucky, etc.

	Prices March 16	Prices March 9	Prices March 2
58-60 U. S. Motor, 437 e.p.	3.50 – 3.875	3.50 – 3.875	3.75 – 4.125
†56-62 400-437 e.p. anti-knock gasoline	3.875– 4.875	3.875– 4.875	4.25 – 5.00
60-62 437 e.p. gasoline	3.50 – 4.00	3.625– 4.00	3.875– 4.125
60-62 400 e.p. gasoline	3.625– 4.125	3.75 – 4.125	4.00 – 4.375
64-66 375 e.p. gasoline	4.25 – 4.50	4.25 – 4.50	4.625– 4.875
68-70 350-360 e.p. gasoline	4.50 – 4.875	4.625– 5.00	4.75 – 5.125
*Domestic Aviation Gasoline	6.00 – 6.25	7.00 – 7.25	7.00 – 7.25
41-43 w.w. kerosine	2.75 – 3.00	2.875– 3.00	3.00 – 3.25
42-44 w.w. kerosine	3.00 – 3.25	3.00 – 3.25	3.125– 3.50
38-40 p. w. distillate	2.375– 2.625	2.50 – 2.75	2.625– 2.75
38-40 straw distillate	2.50 – 2.625	2.50 – 2.625	2.50 – 2.75
32-36 ordinary dark gas oil	1.625– 1.875	1.75 – 2.00	1.75 – 2.00
32-36 dark zero gas oil	2.00 – 2.25	2.125– 2.375	2.25 – 2.375
32-36 straw zero gas oil	2.125– 2.375	2.25 – 2.50	2.375– 2.50
28-30 zero fuel oil (per bbl.)	$0.775–$0.825	$0.80 –$0.85	$0.80 –$0.85
28-30 fuel oil (per bbl.)	$0.75 –$0.80	$0.775–$0.825	$0.775–$0.825
24-26 fuel oil (per bbl.)	$0.575–$0.625	$0.575–$0.625	$0.575–$0.625
18-22 fuel oil, low sulfur (per bbl.)	$0.475–$0.525	$0.475–$0.525	$0.475–$0.525
18-22 fuel oil, high sulfur zero (per bbl.)	$0.475–$0.525	$0.50 –$0.55	$0.50 –$0.55
14-16 fuel oil (per bbl.)	$0.375–$0.425	$0.375–$0.425	$0.375–$0.425

*Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122° F.; 50% recovery at 221°; 90% at 311°; 96% at 347°; end point 374° F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

†Over 45% benzol equivalent. Prices represent quotations and sales.

Crude Price Changes

(*Continued from Page* 102)

dle, in Winkler, Crane and Upton counties of West Texas, Lea county, N. M., Darst Creek, southwest Texas.

It posted 50 cents for Markham, Tex. crude.

It also met the Standard Oil Co. of Louisiana on Smackover crude, posting 45 cents flat for all grades.

On March 5 it met Widwest Refining Co. on Salt Creek, Wyo. crude.

DALLAS.—On March 10 Magnolia Petroleum Co. met Humble's reductions in Gray, Carson and Hutchinson counties of the Texas Panhandle, posting same gravity and price schedules. Wheeler county was unchanged.

On the same date it met Humble in West and Southwest Texas, posting Winkler county crude at 40 cents; Crane, Upton, Howard, Glasscock and Mitchell counties, 35 cents; Darst Creek, 60 cents; and Luling and Corsicana Heavy, 45 cents, a cut of 30 cents on the two latter crudes.

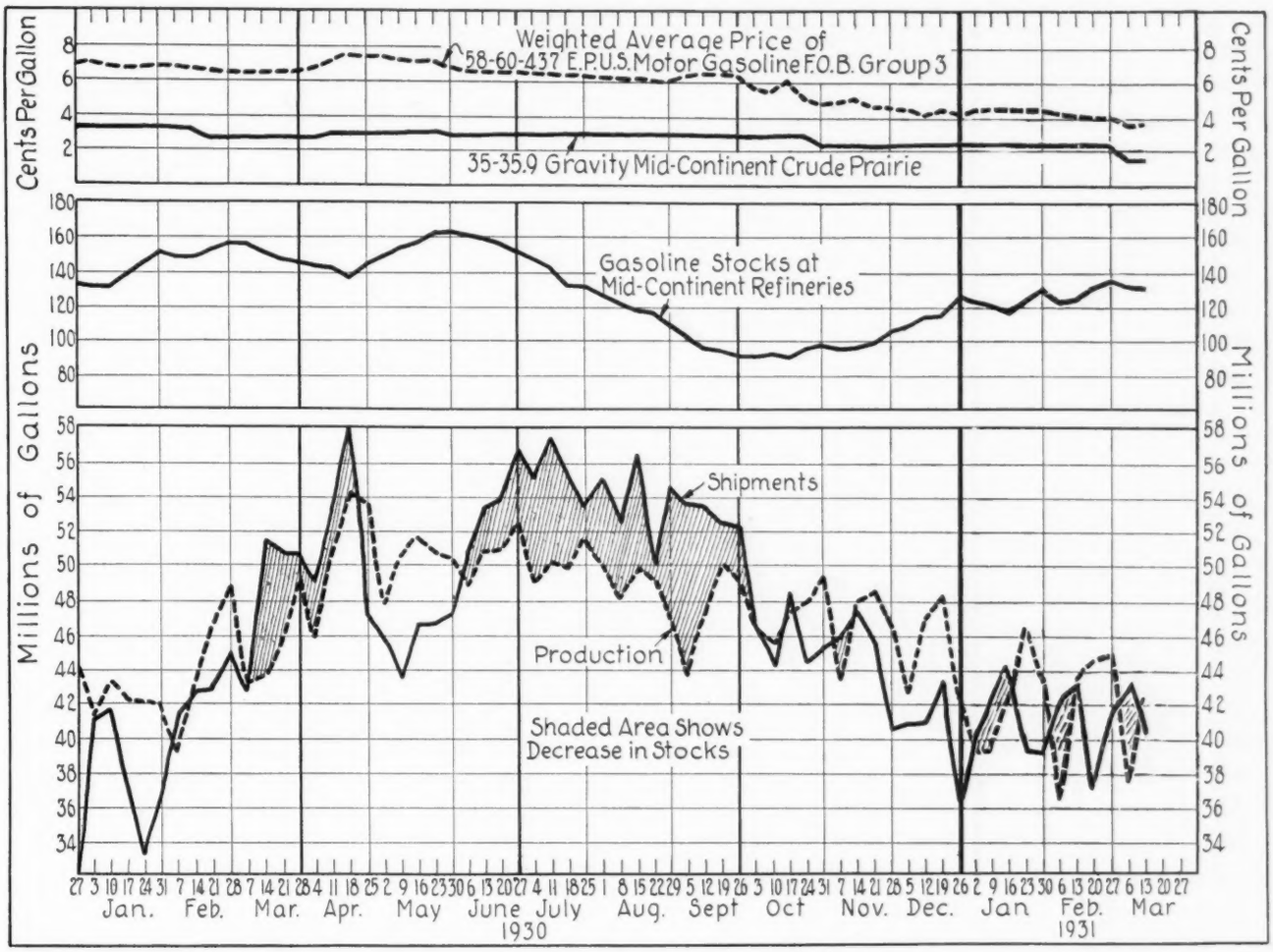
On March 10 it made reductions in Louisiana and Arkansas similar to those of the Standard of Louisiana on the same date. Magnolia's reductions affected Pine Island, Haynesville, Bull Bayou and Cotton Valley, La.; Eldorado light, Rainbow, Smackover and El Dorado East Field, Ark.

Its price schedule is the same as Standard's, but it posts four lower grades beginning with minimum grade of below 26 gravity, which is

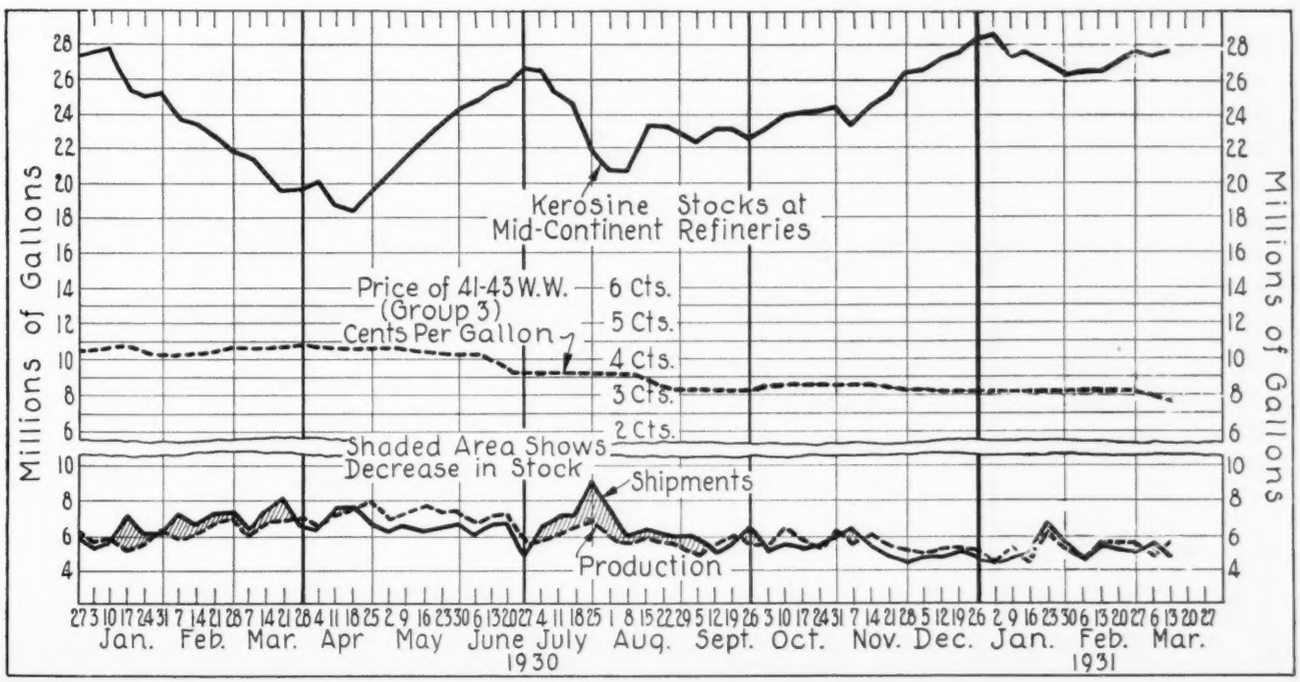
(*Continued on Page* 119)

Barometer of Mid-Continent Refinery Market—Week Ending March 13

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News



Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and Production are extended to date as shown in the table on page 98



Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, except where $ is shown. They represent prices made only to domestic jobbers who resell to the consuming public, except where otherwise noted.

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

GASOLINE AND NAPHTHA

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices March 16	Prices March 9	Prices March 2
48-50 450 e.p. naphtha...	3.50 – 3.75	3.50 – 3.75	3.75
50-52 450 e.p. naphtha...	3.50 – 3.75	3.50 – 3.75	3.75
56-58 450 e.p. gasoline...	3.50 – 3.625	3.50 – 3.625	3.75 – 3.875
58-60 450 e.p. gasoline...	3.50 – 3.625	3.50 – 3.625	3.75 – 3.875
58-60 U.S. Motor 437 e.p.	3.50 – 4.00	3.625– 4.00	3.875– 4.125
60-62 437 e.p. gasoline...	3.625– 4.125	3.75 – 4.125	4.00 – 4.25
60-62 400 e.p. gasoline...	3.75 – 4.25	4.00 – 4.25	4.125– 4.375
64-66 390 e.p. gasoline...	4.25	4.25	4.25 – 4.75
64-66 375 e.p. gasoline...	4.25 – 4.50	4.25 – 4.50	4.50 – 5.00
68-70 350-360 e.p. gasoline	4.75	4.75	4.75 – 5.25
‡Domestic Aviation Gasoline.....	5.25 – 6.00	6.50 – 7.00	6.50 – 7.00

‡Prices based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122° F.; 50% rec. at 221°; 90% at 311°, 96% at 347°; end point, 374°F. Fighting grade in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

52-54 Naphtha.....	5.375– 5.50	5.75	5.75 – 6.00
54-56 Naphtha.....	5.375– 5.50	5.75	5.75 – 6.00
58-60 U.S. Motor 437 e.p.	5.50 – 5.75	5.75 – 5.875	5.75 – 6.00
60-62 400-410 e.p. gasoline	5.75 – 6.00	5.75 – 6.00	5.75 – 6.50
64-66 390 e.p. gasoline...	6.25 – 6.50	6.25 – 6.75	6.375– 6.75
68-70 350-360 e.p.....	7.00 – 7.50	7.00 – 7.75	7.00 – 7.75

OHIO (Quotations of S. O. Ohio. 4c state tax to be added.)

U. S. Motor Gasoline			
Ohio, delivery at any point.....	8.00	8.00	8.00

KANSAS (F. o. b. refinery Kansas destination)

58-60 U.S. Motor 437 e.p.	3.875– 4.125	4.00	4.125– 4.50
60-62 437 e.p. gasoline...	4.00 – 4.25	4.00 – 4.25	4.25 – 4.625
60-62 400 e.p. gasoline...	4.50	4.50	4.50 – 4.75
64-66 375 e.p. gasoline...	5.00	5.00	5.00 – 5.25

NORTH TEXAS (F. o. b. North Texas refineries)

56-58 450 e.p. gasoline...	3.50	3.50 – 3.625	3.75
58-60 450 e.p. gasoline...	3.50	3.50 – 3.625	3.75
58-60 U.S. Motor 437 e.p.	3.50 – 3.75	3.50 – 3.75	3.75 – 4.00
60-62 400 e.p. gasoline...	3.75 – 4.00	3.75 – 4.00	4.00 – 4.25
64-66 390 e.p. gasoline...	4.00 – 4.25	4.00 – 4.25	4.125– 4.375
64-66 375 e.p. gasoline...	4.375– 4.625	4.375– 4.625	4.375– 4.625
68-70 350-360 e.p. gasoline	4.75	4.75	4.75 – 5.00

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment)

50-52 naphtha.....	3.375– 3.50	3.375– 3.50	3.50
58-60 437 e.p. gasoline...	3.375– 3.625	3.375– 3.625	3.625– 3.75
58-60 U.S. Motor 437 e.p.	3.50 – 3.75	3.50 – 3.75	3.75 – 4.00

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

58-60 U.S. Motor 437 e.p.	4.00	4.75	4.75

ARKANSAS (Ark., N. La. and Miss. destination)

58-60 U.S. Motor 437 e.p.	4.00	4.50	4.50

CALIFORNIA (3c tax to be added to California gasoline prices if used in state.)

54-58 U.S. Motor 437 e.p.	4.75 – 5.25	6.00 – 7.00	8.75 –10.00
54-58 U.S. Motor, for outside state shipment....	4.75 – 5.25	6.00 – 7.00	8.00 – 9.25
58-61 375-400 e.p. gasoline	5.25 – 6.00	8.50 – 9.50	11.00 –12.00
42-45 Engine Distillate 445-480 e.p.....	4.75 – 5.25	6.00 – 7.00	7.75 – 9.00

NATURAL GASOLINE

(Note: End point of all grades, not over 375F. Corrosion test adopted Oct. 1, 1927; A.S.T.M. Method D130-27T; doctor test, July 2, 1928.)

OKLAHOMA (F. o. b. Oklahoma refineries)

Grade AA, 80-87.9, 90% Recovery.....	2.625– 2.75	3.00	3.00
Grade A, 72-79.9, 90% Recovery.....	3.00	3.25 – 3.375	3.375– 3.50
Grade BB, 84-92, 85% Recovery.....	2.25 – 2.375	2.50	2.625– 2.75
Grade B, 76-83.9, 85% Recovery.....	2.50 – 2.625	2.625– 2.75	2.75
Grade C, 80-92, 78% Recovery.....	2.25 – 2.375	2.50	2.50 – 2.75

NORTH TEXAS (F. o. b. Breckenridge)

	Prices March 16	Prices March 9	Prices March 2
Grade AA, 80-87.9, 90% Recovery.....	2.625– 2.75	3.00	3.00
Grade A, 72-79.9, 90% Recovery.....	3.00	3.25 – 3.375	3.375– 3.50
Grade BB, 84-92, 85% Recovery.....	2.25– 2.375	2.50	2.625– 2.75
Grade B, 76-83.9, 85% Recovery.....	2.50 – 2.625	2.625– 2.75	2.75
Grade C, 80-92, 78% Recovery.....	2.25 – 2.375	2.50	2.50 – 2.75

NORTH LOUISIANA (F. o. b. Monroe District)

Grade AA.....	†2.875	†3.125	†3.25
Grade BB.....	†2.50	†2.625	†2.875
Grade C.....	†2.50	†2.625	†2.875

CALIFORNIA (F. o. b. California refineries)

75-85, 375-390 e.p. for blending.....	4.50 – 5.00	5.00 – 6.00	5.25 – 6.00

BURNING OILS

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

45 w.w. kerosine.....	4.625– 5.00	4.625– 5.00	4.75 – 5.00
46 w.w. kerosine.....	4.75 – 5.25	4.875– 5.25	5.00 – 5.25
47 w.w. kerosine.....	5.125– 5.375	5.25 – 5.375	5.25 – 5.375
300 mineral seal.....	5.50 – 6.00	5.50 – 6.00	5.50 – 6.00

OKLAHOMA (F. o. b. Oklahoma refineries)

41-43 w.w. kerosine.....	2.75 – 3.00	2.875– 3.00	3.00 – 3.25
42-44 w.w. kerosine.....	3.00 – 3.25	3.125– 3.25	3.25 – 3.50

KANSAS (F. o. b. refinery Kansas destination)

41-43 w.w. kerosine.....	3.25	3.25	3.25 – 3.50
42-44 w.w. kerosine.....	3.50	3.50	3.50 – 3.75

NORTH TEXAS (F. o. b. North Texas refineries)

40-42 w.w. kerosine.....	2.50 – 2.625	2.625– 2.75	2.75 – 3.00
41-43 w.w. kerosine.....	2.75 – 3.00	2.75 – 3.125	2.875– 3.125

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

41-43 w.w. kerosine.....	3.50	3.75	3.75
42-44 w.w. kerosine.....	3.75	4.00	4.00

ARKANSAS (Ark., N. La. and Miss. destination)

41-43 w.w. kerosine.....	3.50	3.75	3.75

CALIFORNIA (F. o. b. California refineries)

38-40 w.w. kerosine.....	4.50 – 5.50	5.00 – 6.00	5.00 – 6.00

NEUTRAL OIL

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

Vis.		(Viscosity at 70° F.)	
200 No. 3 Assoc. Filt....	†22.50 –23.50	†22.00 –23.00	†19.00 –20.00
180 No. 3 Assoc. Filt....	†19.50 –20.50	†19.00 –20.00	†17.50 –18.50
150 No. 3 Assoc. Filt....	†17.00 –18.00	†17.00 –17.50	†15.50 –16.50

Note: Low cost test neutral oils are quoted approximately 6c per gal. higher than prices shown above.

		(Non Viscous)	
34 Grav. 330-340 Flash...	5.50 – 6.00	5.50 – 6.00	5.50 – 6.00

****MID-CONTINENT** (F. o. b. Mid-Continent refineries)

Vis. Color		(Viscosity at 100° F.)	
100—No. 2.....	5.25 – 5.50	5.25 – 5.50	5.50
150—No. 3.....	6.75 – 7.00	6.75 – 7.00	6.75 – 7.00
150—No. 4.....	6.50	6.50	6.50
180—No. 3.....	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
180—No. 4.....	7.75 – 8.00	7.75 – 8.00	7.75 – 8.00
180—No. 5.....	7.50	7.50	7.50
200—No. 3.....	9.50	9.75 –10.00	9.75 –10.00
200—No. 4.....	8.50 – 9.00	9.25 – 9.50	9.25 – 9.50
200—No. 5.....	8.25 – 8.50	8.75 – 9.00	8.75 – 9.00
220—No. 3.....	10.00 –10.50	11.50	11.50
220—No. 4.....	9.75 –10.25	11.00	11.00
220—No. 5.....	10.00 –10.25	10.00	10.00
240—No. 3.....	12.00 –13.00	13.50	13.50
240—No. 4.....	10.50 –11.00	11.00 –12.00	12.50
240—No. 5.....	10.50 –11.00	10.50 –11.50	11.50
280—No. 3.....	14.00	15.00	15.00
280—No. 4.....	13.00 –13.50	13.00 –14.00	14.50
280—No. 5.....	12.00 –12.50	12.00 –13.00	13.50

Note: Quotations for 0 to 10 cold test neutral oils are 1 to 2 cents higher, depending on the grade.

****Prices represent Quotations and Sales.**

†Prices nominal ††Only one refiner quoting *Quotations only

Refinery Markets Wax, Lubricants, Heavy Oil

Prices given below are in cents per gallon, except where $ is shown. They represent prices made only to domestic jobbers who resell to the consuming public, except where otherwise noted.

(For quick reference to Refinery Prices, get the OIL PRICE HANDBOOK, published annually)

GULF COASTAL (F. o. b. Gulf Coastal refineries)

Vis. Color	Prices March 16 (Viscosity at 100° F., pour test 0)	Prices March 9	Prices March 2
100—No. 2 Pale	5.50 – 6.25	5.50 – 6.25	5.50 – 6.25
200—No. 3 Pale	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
300—No. 3 Pale	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
500—No. 3½ Pale	10.00 –10.50	10.00 –10.50	10.00 –10.50
750—No. 4 Pale	11.50 –12.50	11.50 –12.50	11.50 –12.50
1200—No. 4 Pale	14.50 –15.00	14.50 –15.00	14.50 –15.00
2000—No. 4-5 Pale	15.50 –16.00	15.50 –16.00	15.50 –16.00
200—No. 5½ Red Oil	7.00 – 7.50	7.00 – 7.50	7.00 – 7.50
300—No. 5½ Red Oil	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
500—No. 6 Red Oil	9.00 –10.00	9.00 –10.00	9.00 –10.00
750—No. 6 Red Oil	11.25 –11.75	11.25 –11.75	11.25 –11.75
1200—No. 5-6 Red Oil	13.50 –14.00	13.50 –14.00	13.50 –14.00
2000—No. 6 Plus Red Oil	15.50 –16.00	15.50 –16.00	15.50 –16.00

‡CALIFORNIA (F. o. b. California refineries)

Vis. Color	(Viscosity at 100° F.)		
100—No. 3	9.50 –10.00	9.50 –10.00	9.50 –10.00
200—No. 3	11.50	11.50	11.50
300—No. 3	13.00	13.00	13.00
450—No. 3	15.50	15.50	15.50
550—No. 3	16.50	16.50	16.50
600—No. 3	17.00	17.00	17.00
200—No. 5	11.00	11.00	11.00
300—No. 5	12.00	12.00	12.00
400—No. 5	14.00	14.00	14.00
500—No. 5	15.00	15.00	15.00
600—No. 5	16.00	16.00	16.00
700—No. 7	18.00	18.00	18.00

‡Neutral oils not manufactured commercially in California.

CYLINDER STOCKS

MID-CONTINENT (F. o. b. Mid-Continent refineries)

(Cylinder stock prices represent quotations and sales to domestic jobbers only).

190-200 Vis. D at 210° Brt. St.	23.00	23.00	23.00
150-160 Vis. D at 210° Brt. St., 0-10 cold test	17.50 –18.00	17.50 –19.00	17.50 –19.00
150-160 Vis. D at 210° Brt. St., 10-25 cold test	15.00 –17.00	16.00 –17.00	15.50 –17.00
150-160 Vis. D Brt. Stock, 25-40 cold test	15.00	15.00 –16.00	15.00 –16.00
150-160 Vis. E 210° Brt. St.	15.00 –16.00	15.00 –16.00	15.00 –16.00
600 St. Ref. Olive Green	6.00 – 8.00	6.00 – 8.00	5.50 – 6.00
600 St. Ref. Dark Green	4.50 – 5.50	4.50 – 5.50	4.50 – 5.50
Black Oil	4.00 – 5.00	4.00 – 5.00	4.00 – 5.00

PENNSYLVANIA (F. o. b. Western Penna. refineries) (A.S.T.M. Tests)

600 Steam Refined, filterable	8.25 – 8.75	8.25 – 8.50	8.25 – 9.00
650 Steam Refined	11.75 –12.75	12.00 –13.00	12.25 –13.00
600 Flash	13.50 –14.00	13.50 –14.50	13.50 –14.50
630 Flash	18.50 –20.00	19.00 –20.00	19.25 –20.00
600 Warren E	12.25 –13.00	12.25 –13.00	12.25 –13.00
600 Oil City E	12.00 –13.00	12.00 –13.00	12.00 –13.00
600 D Filtered	†14.50 –15.00	†14.50 –15.00	†14.50 –15.00
Cold Test Stocks, 140-150 vis. at 210°, 540-550 flash, No. 8 color, ‡20 pour test and below	18.50 –19.00	18.50 –19.00	18.00 –19.00
No. 8 color, ‡25 and 35 pour test	18.00 –19.00	18.00 –19.00	17.50 –18.00
No. 8 color, ‡40 pour test and above	17.50 –19.00	17.50 –19.00	17.50 –18.00

‡Beginning March 16, pour tests changed to those shown above. Were formerly: 25 pour test; 25-35 pour test; and above 35 pour test, respectively.

WAX

PENNSYLVANIA (Per pound, F. o. b. New York)

122-124 white crude scale a.m.p.	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
124-126 white crude scale, a.m.p.	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375

****OKLAHOMA** (Per pound in barrels; in a few instances, per pound in burlap bags; F. o. b. Oklahoma refineries.)

124-126 White Crude Scale, a.m.p.	1.875– 2.00	1.875– 2.00	2.00

DISTILLATE, GAS AND FUEL OIL

PENNSYLVANIA (For outside Pittsburgh district)

36-40 fuel oil	3.00 – 3.25	3.00 – 3.50	3.00 – 3.75
30-34 fuel oil	3.125– 3.25	3.125– 3.50	3.25 – 3.75
28-32 fuel oil	3.125– 3.25	3.125– 3.50	3.25 – 3.75

Note: Zero cold test fuel oils are quoted 0.25c to 0.50c higher than prices shown above.

†Prices nominal ††Only one refiner quoting *Quotations only

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices March 16	Prices March 9	Prices March 2
38-40 straw distillate	2.50 – 2.625	2.625– 2.875	2.75 – 2.875
36-38 straw distillate	2.25 – 2.375	2.50	2.50 – 2.75
32-36 straw gas oil	2.00 – 2.25	2.00 – 2.25	2.25 – 2.375
32-36 straw gas oil zero	2.25 – 2.375	2.25 – 2.375	2.375– 2.50
32-36 dark gas oil	1.75	1.75 – 2.00	1.75 – 2.125
32-36 dark gas oil zero	2.00 – 2.25	2.00 – 2.25	2.125– 2.375
28-30 zero fuel oil(per bbl.)	$0.80 –$0.85	$0.80 –$0.85	$0.85 – 0.875
28-30 fuel oil (per bbl.)	$0.75 –$0.80	$0.75 –$0.80	$0.80 – 0.825
26-28 fuel oil (per bbl.)	$0.65 –$0.70	$0.60 –$0.70	$0.70 – 0.75
24-26 fuel oil (per bbl.)	$0.50 –$0.55	$0.50 –$0.55	$0.55 – 0.65
22-26 fuel oil (per bbl.)	$0.475–$0.50	$0.475–$0.50	$0.475– 0.55
18-22 fuel oil (per bbl.)	$0.425–$0.45	$0.425–$0.475	$0.425– 0.475
16-20 fuel oil (per bbl.)	$0.375–$0.425	$0.40 –$0.425	$0.40 – 0.45
14-16 fuel oil (per bbl.)	$0.35 –$0.40	$0.40	$0.40 – 0.425

KANSAS (F. o. b. refinery Kansas destination)

38-40 straw distillate	2.75 – 3.00	2.75 – 3.00	2.875– 3.25
36-38 straw distillate	2.75	2.75	2.75 – 3.00
32-36 straw gas oil	2.50 – 2.625	2.50 – 2.625	2.50 – 2.625
18-22 fuel oil (per bbl.)	$0.50 –$0.60	$0.50 –$0.60	$0.55 – 0.65
10-14 fuel oil (per bbl.)	$0.425–$0.50	$0.425–$0.50	$0.475– 0.55

NORTH TEXAS (F. o b. North Texas refineries)

38-40 straw distillate	2.375– 2.50	2.50 – 2.75	2.50 – 2.75
38-40 p.w.treated distillate	2.50 – 2.75	2.625– 2.875	2.625– 3.00
32-36 gas oil, cracked	1.75 – 2.00	2.00 – 2.25	2.125– 2.25
32-36 St. reduced gas oil	1.50 – 1.75	1.75 – 2.00	1.75 – 2.125
24-26 fuel oil (per bbl.)	$0.375–$0.425	$0.375–$0.425	$0.425– 0.45
20-24 fuel oil (per bbl.)	$0.35 –$0.40	$0.35 –$0.40	$0.40 – 0.45
18-22 fuel oil (per bbl.)	$0.325–$0.35	$0.325–$0.35	$0.35 – 0.40

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment.

34-38 gas oil	2.00	2.00 – 2.25	2.00 – 2.25
30-32 gas oil	1.50	1.625– 2.00	1.75 – 2.00
28-30 zero gas oil	2.00 – 2.25	2.125– 2.375	2.125– 2.375
18-22 fuel oil (per bbl.)	$0.375–$0.40	$0.375– 0.40	$0.375– 0.40

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

32-36 gas oil, dark	2.50	2.50	2.50 – 3.00
32-36 gas oil, straw	2.50	2.50	2.50 – 3.00
14-16 fuel oil (per bbl.)	$0.60 –$0.70	$0.60 –$0.70	$0.60 – 0.70

ARKANSAS (Ark., N. La. and Miss. destination)

32-36 gas oil, straw	2.50	2.50	2.75
32-36 dark gas oil	2.50	2.50	2.75
28-30 gas oil	2.25	2.25	2.50
20-24 fuel oil (per bbl.)	$0.75	$0.75	$0.85
9-12 fuel oil (per bbl.)	$0.65	$0.65	$0.70
Black oil	3.25	3.25	3.25

CALIFORNIA (F. o. b. San Joaquin Valley. Nominal pipe line charge to San Francisco 24c per bbl. more and to San Pedro 20c per bbl. more.)

14-18 fuel oil (per bbl.)	$0.45 –$0.60	$0.45 –$0.60	$0.35 –$0.60
14-18 Bunker oil (per bbl.)	$0.60 –$0.85	$0.60 –$0.85	$0.60 –$0.85
30-34 gas oil (per bbl.)	$0.85 –$0.95	$0.85 –$1.15	$0.80 –$1.05
27 Plus Diesel oil (per bbl.)	$0.75 –$0.85	$0.80 –$1.05	$0.75 –$1.00

PETROLATUMS

PENNSYLVANIA (Per pound, in barrels, carload lots, f. o. b. refinery. In tank cars ⅜c to ¾c per pound less.) Two refiners quoting.

Snow White	7.00 – 8.00	7.00 – 8.00	7.00 – 8.00
Lily White	6.125– 7.00	6.125– 7.00	6.125– 7.00
Cream White	5.125– 6.00	5.125– 6.00	5.125– 6.00
Light Amber	2.875– 3.00	2.875– 3.00	2.875– 3.00
Amber	2.625– 2.75	2.625– 2.75	2.625– 2.75
Red	2.00 – 2.50	2.00 – 2.50	2.00 – 2.50

PETROLEUM COKE

****OKLAHOMA** (F. o. b. Oklahoma refineries)

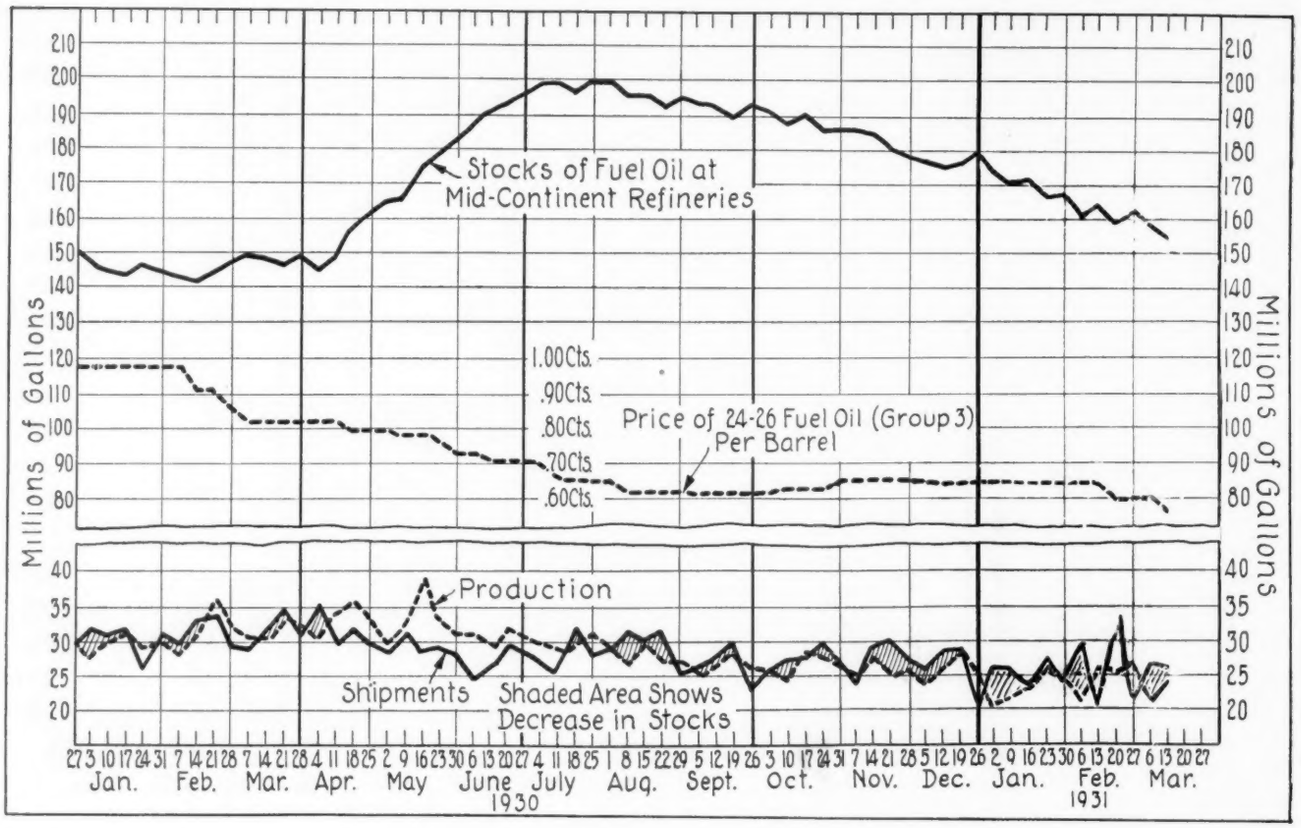
(Per ton in car lots)

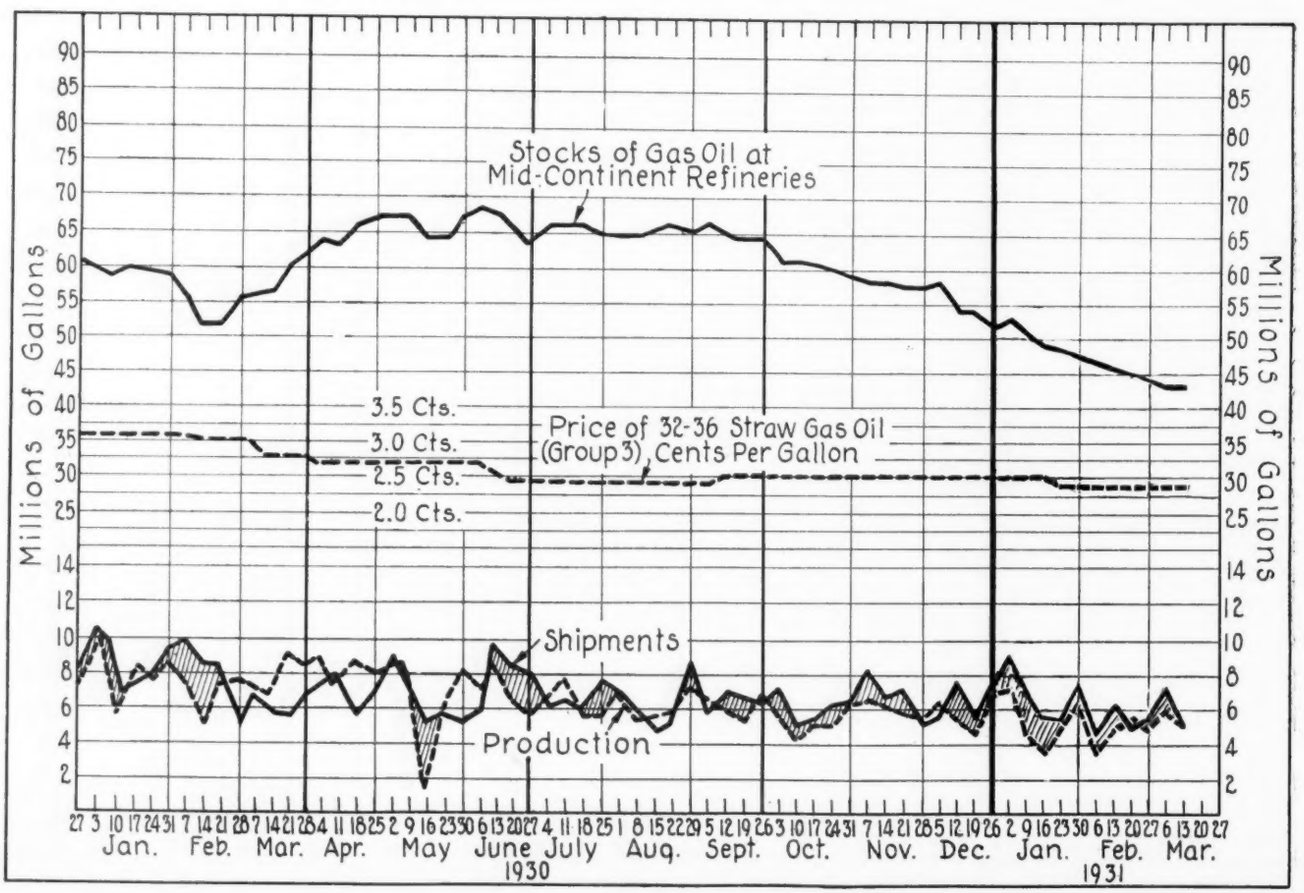
Lump	$4.50 –$5.00	$4.50 –$5.00	$4.50 –$5.00
Still run	$3.00	$3.00	$3.00
Breeze	$2.00	$2.00	$2.00

****Prices represent Quotations and Sales**

Barometer of Mid-Continent Refinery Market—Week Ending March 13

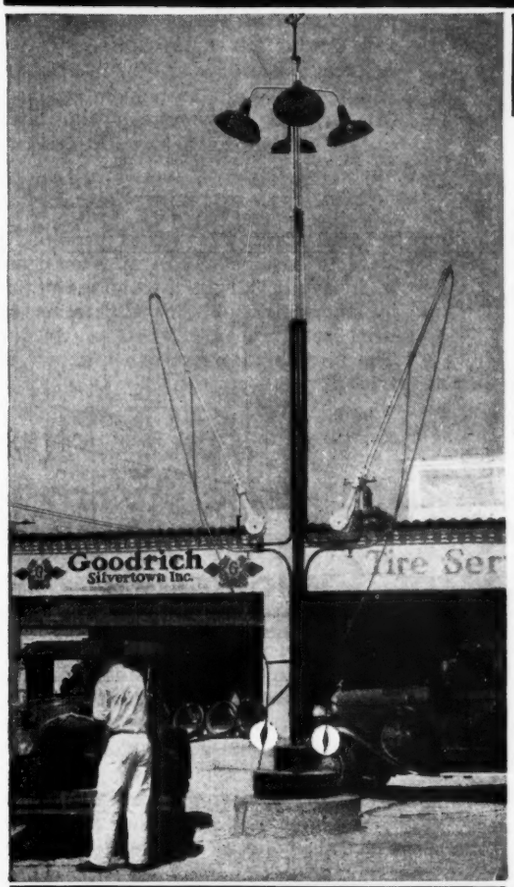
Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News

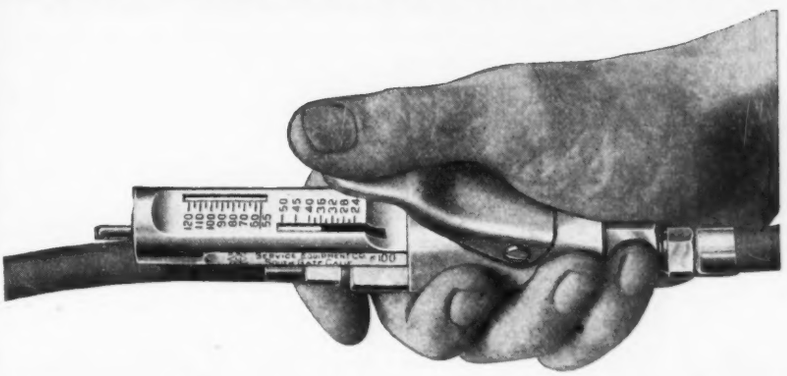




DIAMOND-U

TIRE INFLATOR





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Light Weight—12½ oz.

All for $12.50 Complete

California Refinery Market

Prices Fall After Crude and T.W. Cuts

LOS ANGELES, March 14

DOWNWARD revision of price structures for both crude and gasoline was the order of the day on the Pacific Coast during the past week. Major purchasing companies followed Union Oil Co.'s lead in reducing posted prices for crude and Standard Oil Co. announced effective March 11 an additional 1-cent cut in tank wagon prices in California, Oregon and Washington.

Tank car quotations for gasoline for both interstate and intrastate shipment fell to new low levels as independent refiners sought to maintain their gallonage. Gasoline in tank car lots was available generally, at 4.75 to 5.25 cents, exclusive of tax, with retail prices from 1 to 6 cents higher.

In southern California independent gasoline sold at 6 to 9 cents in competition with standard brands at 11.50 cents. A few dealers handling major products were cutting their 3-cent margin to 2 cents selling at 10.50 cents.

Although the trade looked forward to an increase in out of state business as a result of the lower prices, competition offered by Mid-Continent gasoline continued to be rather severe.

Lower prices in both the crude and gasoline structures prompted a renewal of inquiries from Atlantic seaboard buyers. Exporters thought bulk U. S. Motor gasoline could be bought in the local market at 4.25 to 5 cents, but it was evident that buyers had in mind a price of about 4 cents.

California natural gasoline for export was still unable to compete with Gulf coast bulk quotations although it was thought a product of 96 recovery, 22 pound vapor pressure, could be had at about 4 to 4.25 cents.

In the domestic markets, a genuine scarcity of gas oil kept quotations at high levels notwithstanding the reduction in crude. For 30-34 gravity gas oil prices ranged from $0.85 to $0.95 per barrel. Diesel sold at $0.75 to $0.90.

Natural gasoline for blending purposes threatened to clog the local market. Tank car quotations were 4.50 to 5.00 cents. Only a shade lower than the gasoline market, and stocks were reported to be piling up at an alarming rate in the Los Angeles Basin. This condition has not been helped by the decrease in natural gasoline purchases by major companies since the first of the year.

Demand for kerosine was keen with quotations a shade lower ranging from 4.50 to 5.50 cents. Fuel oil quotations remained unchanged at $0.45 to $0.60.

Acewood, Union Men Now Brokers

LOS ANGELES—Organization of the Refiners Marketing Co., Ltd., to handle all grades of Pennsylvania and Mid-Continent petroleum products has been effected here, according to a recent announcement.

Officers are: William H. Henszey, president; Edw. Bush, vice president; and C. F. Cheminant, secretary and treasurer. All officers were formerly with Acewood Petroleum Sales Corp. and Union Petroleum Co.

Executive offices are in the Richfield Bldg. here and branch office is at Oil City. Bulk storage is maintained at Los Angeles harbor and at Oakland, Cal.

RICHMOND, Va.—The plan of the state to acquire 45,000 miles of county highways in Virginia, to be maintained by an additional 1 cent gasoline tax, has been proposed by Gov. Gardner. The plan is to create one highway district for the state.

California Gasoline Price War Is Battle for Gallonage

LOS ANGELES March 14

IN THE opinion of executives of leading California oil companies disturbances now prevailing in Pacific Coast gasoline markets are likely to extend through the summer months unless public opinion or the government, state or federal, intervenes.

Started primarily as a move toward the elimination of throat-cutting price competition by independents and chiseling by one or two majors who unloaded domestic gasoline at 3 to 4 cents under the market the gasoline price-war has now developed into a battle for gallonage between the major refiners.

Standard Oil Co. of California one of the larger companies to lose considerable gallonage in southern California through the activities of these "bootleggers" fired the first shot on Feb. 25 with a reduction of 2 cents in principal California marketing centers. Since then there has been a succession of cuts in the tank wagon and retail prices until today major gasoline is selling at independent stations as low as 9.50 cents per gallon in southern California and 12.50 cents in Seattle and Tacoma, Wash.

Effective March 14, Standard reduced the retail price at Standard Stations Inc., a subsidiary, 1 cent in the main distribution areas of California and in the Portland district, Oregon, and 1.5 cents in Seattle and Tacoma, Wash. No cut was made in the wholesale price so that in effect this lower retail schedule reduces the stations operator's margin of profit to 2 cents.

Standard and several other major refiners are in favor of the 2-cent differential on the stand that a smaller profit to the reseller would dampen the urge to cut under the canopy to "customers." Heretofore, with the 4-cent margin in vogue at practically all stations handling major gasolines, there has been a tendency to give away a portion—one or two cents—hoping to make it up through increased sales.

However, nearly all these major companies still have a number of contracts with resellers calling for tank wagon delivery at 4 cents under the posted tank wagon or retail price and some are recently reported to have increased this spread to 5 cents in competition with independent gasolines.

Differentials of either 4 or 5 cents, at the existing retail of 10.50 cents in southern California, results in a tank wagon delivery price to dealers of 5.50 to 6.50 cents, including 3-cent tax.

During the past few months there has been a definite trend on the part of companies holding these wide spread contracts to get out from under. Recently this policy has extended to deliveries of gasoline on consignment, the companies agreeing to make such deliveries only on a day to day basis.

Out of this newest price war, destined, in the opinion of experts, to be a battle to the finish, it is predicted that a more stabilized marketing structure will be developed. One that will tend to discourage wholesale price cutting in the future.

Pennsylvania Markets

General Market Situation Unchanged

CLEVELAND, March 16.—The general market situation in Pennsylvania was unchanged in the second week of March. Trading of all commodities was relatively light. Neutral oils remained tight due largely to scarcity and bright stock generally was steady. Prices of other oils tended toward the downside.

Tank car prices for gasoline reacted but little to the two 1-cent reductions in tank wagon and service station prices made by Atlantic Refining Co. throughout Pennsylvania and Delaware. There is not the usual relationship between Pennsylvania tank car and tank wagon prices that might be expected. Pennsylvania-made gasoline is not the best motor fuel for the hills in that state and according to several market observers the bulk of shipments from Pennsylvania refineries are made to points outside of the state.

Kerosine demand was reported slow by most traders; others said they had enjoyed a good demand particularly from the New England states. One refiner reported he had had to purchase approximately 75 cars of kerosine in the last 30 days to supply the requirements of his regular customers. This apparently did not take up the surplus offerings from other refineries.

Neutral oil activity quieted down somewhat last week. Standing orders were in the market for sufficient quantities to prevent any surplus from accumulating, but demand was not nearly as feverish as it has been recently. Bright stock was fairly active with prices tending upward. Several sellers reported demand for compounded motor oils was exceptionally good.

Cylinder stocks were quiet but prices for the most part were unchanged. Wax was steady at 2.25 cents a pound, New York.

Correction

In connection with an article on the Quality Oil Co., of Winston-Salem, N. C., appearing in Feb. 25 issue of NATIONAL PETROLEUM NEWS it was stated the company distributed products for the Shell Petroleum Corp. This should have read Shell Eastern Petroleum Products, Inc.

PROVIDENCE, R. I.—Frederick V. Joost, recently with the Indian Refining Co., has joined the Mexican Petroleum Corp.

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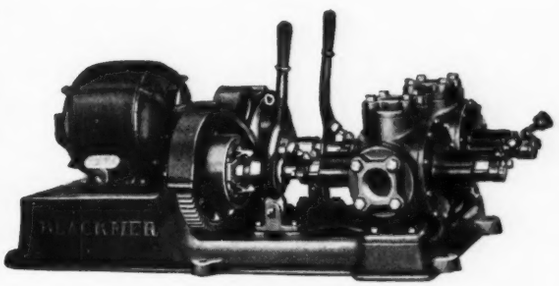

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Eastern Domestic Markets

Gasoline Prices Off in Leading Districts

Staff Special
NEW YORK, March 14

LOWER tank car, tank wagon, and retail prices during the week ended March 14 threatened to shake the price structure in eastern gasoline markets to new low levels. On March 11 the Atlantic Refining Co. announced a 1-cent tank wagon and service station reduction for gasoline in Pennsylvania and Delaware. Before the week ended the company announced that an additional 1-cent reduction would be made in the same territory on Monday, March 16.

Tank car lots of gasoline were offered freely at New York harbor and Baltimore at 6.50 cents. Competition was quietly active at New York harbor throughout the week. Demand from the jobbing trade was only fair. Jobbers have been buying on a hand-to-mouth basis believing that lower prices could be obtained before the month is out. This belief was encouraged by a few major sellers who were inclined to shade prices wherever it was necessary to take business.

Barge-lot offerings were reported in a few instances at New York harbor at 6 cents which was more than the usual 0.25-cent differential under the tank car price for U. S. Motor gasoline. Although the 7-cent price which was quoted by many sellers brought in a few orders, by far the majority of sales were made at 6.50 cents. One seller reported a sale of four tank cars at 6.25 cents.

The two cargoes of Roumanian gasoline which were offered in New York a week ago did not receive a very friendly reception. Potential buyers were reported to have been content to rely on the supply from the American Gulf. Material from the Gulf was offered at comparable prices (5.50 cents c.i.f. New York harbor) and possessed a better anti-knock rating than the foreign gasoline.

The Philadelphia market was the only bright spot in seaboard markets. Tank car prices there remained steady at 7 cents, in spite of the tank wagon price reductions.

Buying, however, was reported relatively light in this district.

Gasoline prices in the Baltimore market declined 0.25-cent to 6.50 cents and while sizeable quantities were available at that price buying was slow. Very little California gasoline was offered along the Atlantic coast, but its equivalent, or better, continued to be freely available at the same prices as for regular U. S. Motor.

New England markets were very quiet. There were no price changes reported in any of the principal marketing centers. Activity in the spot market was at a standstill. Demand for heating oils was likewise on the decline in sympathy with the warmer weather existing around Boston. The same oils were in fair demand at New York. Prices in both markets remained unchanged at 4.50 and 5.50 cents for the heavy and light grades, respectively.

Prices for Grade C bunker oil remained unchanged at $1.05 per barrel at both New York and Boston. Diesel oil was quoted at $1.85 per barrel at New York harbor.

Gulf Lubes Marking Time

HOUSTON, March 14.—Markets remained constant over the week in the South Texas lubricant manufacturing district.

Gulf Coastal crude having failed to feel the effect of price slashing elsewhere, there was no change in the raw material situation for adjustment. Demand continues normal for the in-between season.

Gulf Coast Markets

Cargo Trading Generally Quiet

Staff Special
NEW YORK, March 14

BULK markets at the Gulf were in more or less of a passive state the past week. There was one inquiry for light oils from abroad and a few overtures were made for cargo lots of gasoline for coastwise shipment.

A London buyer inquired for approximately 60,000 barrels of 64-66, 375 end point gasoline for lifting in April and May, but suppliers entertained little hope of taking the business at present prices. Reports were going around the trade that Roumanian suppliers were not taking any business farther ahead than April, and that the supply of material in the Black Sea district had diminished considerably. Some encouragement was taken from this information but as yet no business was on the horizon at the prices quoted by the American sellers.

Little change was noted in the prices quoted for the various grades of gasoline. That prices could be shaded slightly on firm offer was generally accepted, but sellers were averse to committing themselves in the absence of actual business. Cargoes of a good grade of U. S. Motor gasoline were available for shipment to New York harbor at c.i.f. prices ranging from 5.50 to 5.75 cents. On the basis of the present tanker rates these prices indicate a net back of approximately 5 cents at the Gulf.

The market for cased goods was exceptionally quiet last week. Gas oil was freely available at 3 cents. Grade C Bunker oil in cargo lots continued available for $0.65 per barrel in a market where little activity was noted.

Venezuela Crude

The market for Venezeula crude continued quiet. The price for this material was generally reported at $0.76 per barrel, f.o.b. deepwater in the Lake Maracaibo region.

Panuco Crude

The market for Panuco crude featured one cargo sale at $0.48 per barrel, f.o.b. Tampico.

Wax Markets

Trading Marks Time

NEW YORK, March 14.—Wax markets marked time again the past week. A few inquiries for scale wax came into the New York market from United Kingdom buyers but failed to disgorge other than quotations of 2.25 cents per pound from sellers. These inquiries called for 50 to 75 tons for April shipment. Prices in the New York market remained generally unchanged for both scale and the fully refined grades.

In the New Orleans market prices for scale wax were a shade lower than quotations in the New York market. Yellow crude scale was offered at 2.15 cents per pound while white crude scale was available at 2.20 cents. Prices for the fully refined grades remained generally unchanged.

N.P.N. Service Record

Some of the requests for information, data and advice, which were taken care of in various National Petroleum News offices in the past week are:

Arkansas oil stock investor told about oil promoters who followed the boom days after the World War and referred to local banker for information on several companies he inquired about.

* * *

Ohio truck and bus manufacturer told of meetings held by various divisions of American Petroleum Institute in the course of a year.

* * *

Florida agent of large oil company referred to American Petroleum Institute for booklets telling of various phases of the oil industry in non-technical style, for purposes of an address before a luncheon club.

* * *

Secretary of New York oil jobbing corporation told of the advantages found by one company in using check valves as against foot valves in gasoline pump installations, and what the latest practice is along this line.

* * *

President of Kentucky oil producing company furnished names, addresses and plant locations of refiners in five eastern and southeastern states.

* * *

General manager of Kansas oil and grease compounder furnished details lubricating oil refiner operating over the world, as to refinery locations, compounding plants, capacities of plants, its production of crude and the names of companies it has acquired in the past year.

* * *

German oil distributor furnished names and addresses of nine of the largest asphalt manufacturers and four smaller ones; also four petroleum makers and three refiners of white mineral oils.

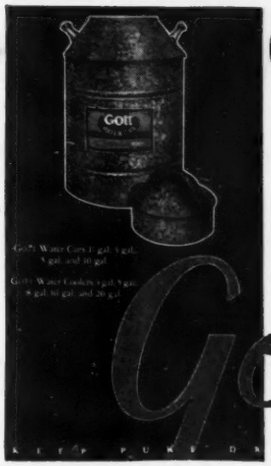
NEW EQUIPMENT

Erie Meter Systems, Inc., Erie, Pa., manufacturer of gasoline pumps, expected to be making its gasoline meter pumps at its new Tulsa plant by March 15 where it will employ about 100 men when operating under full production.

This new manufacturing plant is on North Rockford St. and the Frisco railroad, and has approximately 15,000 square feet of floor space for manufacturing, plus one and one-half acres of land for future expansion.

Executives who will divide their time between Erie and Tulsa are L. O. Carlson, president; N. A. Carlson, vice president and general manager; L. F. Smith, secretary and treasurer; and H. W. Bole, general superintendent.

Executives and foremen moving from Erie, Pa. to Tulsa include: E. J. Dixon, who will be in charge of sales; W. A. Cohan, office manager; R. A. Newcomb, superintendent, and these department heads: E. Meyers, Assembly; J. McGaughey, electrical; C. Lamson, finishing; B. Mischler, test and repair; and H. Hayes, shipping.



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Complete Seaboard Market

(Export Markets for whole year given in OIL HANDBOOK. Each volume carries refinery, tank wagon, crude and export markets—complete for the whole year)

Eastern Domestic Market

(Prices for tank car lots, f. o. b. refinery or seaboard terminal, representing majority of sales and quotations. Prices shown below do not include inspection tax levied in some states.)

U. S. MOTOR GASOLINE	Prices March 16	Prices March 9	Prices March 2
New York harbor	6.50 – 7.00	6.75 – 7.00	6.75 – 7.00
Portland district	7.75 – 8.00	7.75 – 8.00	7.75 – 8.00
Boston district	*7.40 – 7.50	*7.40 – 7.50	*7.40 – 7.50
Providence district	*8.25 – 8.50	*8.25 – 8.50	*8.25 – 8.75
Philadelphia district	7.00	7.00	7.00 – 7.50
Baltimore district	6.50 – 6.75	6.75 – 7.00	6.75 – 7.00
Norfolk district	7.00	7.00	7.00 – 7.50
Charleston district	7.00	7.00	7.00 – 7.50
Savannah district	7.00	7.00	7.00 – 7.50
Jacksonville district	7.00	7.00	7.00 – 7.50
CALIFORNIA, U. S. MOTOR GASOLINE			
New York harbor	6.75 – 7.00	6.75 – 7.00	†7.00
Philadelphia district	†7.00	7.00	7.00
Baltimore district	6.75	6.75 – 7.00	7.00
‡DOMESTIC AVIATION GASOLINE			
New York harbor	10.00 –13.00	10.00 –13.00	10.00 –13.00
Philadelphia	10.00 –12.00	10.00 –12.00	10.00 –12.00
Baltimore	11.00 –13.00	11.00 –13.00	11.00 –13.00
Boston	11.50 –13.00	11.50 –13.00	11.50 –13.00

‡Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167°F. and not less than 122°F.; 50% recovery at 221°; 90% at 311°; 96% at 347° end point 374°F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

WATER WHITE KEROSINE			
New York harbor	6.00 – 6.25	6.25 – 6.50	6.25 – 6.50
Philadelphia district	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50
Baltimore district	6.50	6.50	6.50
GAS OIL: 28-34 Gravity			
New York harbor	4.50	4.50	4.50
Boston district	4.50	4.50	4.50
FURNACE OIL: 36-40 Gravity			
New York harbor	5.50	5.50	5.50
Boston district	5.50	5.50	5.50
GRADE C BUNKER OIL (Lighterage 5c per bbl. additional)			
New York harbor	$1.05	$1.05	$1.05
Boston district	$1.05	$1.05	$1.05
DIESEL OIL			
New York harbor	$1.85	$1.85	$1.85

†Nominal. *Delivered prices.

New York Export Market

(Lubricating oils are per gal. in bbls. F.a.s. New York)

	March 16	March 9	March 2
CYLINDER OILS (Pennsylvania Products)			
Bright stock, No. 8 color	23.50 –25.00	23.50 –25.00	24.00 –26.00
Bright stock, No. 6½ color diluted	22.50 –24.00	22.50 –24.00	23.00 –25.00
600 D filtered	22.50 –25.00	22.50 –25.00	22.50 –25.00
600 Warren E filtered	18.00 –21.00	18.00 –21.00	19.00 –22.00
600 stm. refd. unfiltered	14.50 –16.00	14.50 –16.00	15.00 –17.00
650 stm. refd. unfiltered	18.00 –20.00	18.00 –20.00	18.00 –20.00
600 flash steam refined	18.50 –20.00	18.50 –20.00	18.50 –21.00
630 flash, steam refined	24.00 –26.00	24.00 –26.00	25.00 –28.00
RED PARAFFIN OILS (Vis. 100°)			
300 vis. No. 6½ color	17.00 –20.00	17.00 –20.00	17.00 –20.00
250 vis. No. 6 color	16.50 –17.50	16.50 –17.50	16.50 –17.50
200 vis. No. 6 color	14.75 –17.00	14.75 –17.00	14.75 –17.00
PALE PARAFFIN OILS (Vis. 100°)			
230 vis. No. 3¾ color	21.50	21.50	21.50
180 vis. No. 3¼ color	18.00 –20.00	18.00 –20.00	18.00 –20.00
100 vis. No. 2¼ color	12.50 –15.00	12.50 –15.00	12.50 –15.00
MOTOR OILS (Vis. 100°)			
600 vis. No. 7 color	28.00 –30.00	28.00 –30.00	28.00 –30.00
500 vis. No. 6½ color	26.50 –29.50	26.50 –29.50	26.50 –29.50
400 vis. No. 7¼ color	25.00 –28.00	25.00 –28.00	25.00 –28.00
300 vis. No. 6 color	22.00 –26.00	22.00 –26.00	22.00 –26.00
200 vis. No. 6 color	21.00 –23.50	21.00 –23.50	21.00 –23.50

Wax Market

(Melting points are A.M.P. method. Prices in cents per pound, f.a.s. carload lots.)

NEW YORK	March 16	March 9	March 2
124-126 Yellow crude scale	2.25	2.25	2.25
122-124 White crude scale	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
124-126 White crude scale	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375
123-125 Fully refined	3.25	3.25	3.25
125-127 Fully refined	3.375– 3.50	3.375– 3.50	3.375– 3.50
128-130 Fully refined	3.625– 3.75	3.625– 3.75	3.625– 3.75
130-132 Fully refined	3.625– 3.875	3.625– 3.875	3.625– 3.875
133-135 Fully refined	4.375– 4.50	4.375– 4.50	4.375– 4.50
135-137 Fully refined	4.625– 4.75	4.625– 4.75	4.625– 4.75
NEW ORLEANS			
124-126 Yellow crude scale	2.15 – 2.25	2.25	2.25
122-124 White crude scale	2.20 – 2.30	2.25 – 2.375	2.25 – 2.375
124-126 White crude scale	2.20 – 2.30	2.25 – 2.375	2.25 – 2.375
123-125 Fully refined	3.25	3.25	3.25
125-127 Fully refined	3.375– 3.50	3.375– 3.50	3.375– 3.50
128-130 Fully refined	3.50 – 3.75	3.50 – 3.75	3.50 – 3.75
130-132 Fully refined	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
133-135 Fully refined	4.375	4.375	4.375

Gulf Coast Bulk Market

(Prices are f. o. b. Gulf oil terminals representing sellers' opinions covering bulk shipments of 20,000 barrels or more, for export and / or coastwise shipment unless otherwise noted.)

GASOLINE	Prices March 16	Prices March 9	Prices March 2
U. S. Motor	5.00 – 5.125	5.00 – 5.125	5.125– 5.25
60-62, 400 e.p.	5.375– 5.50	5.375– 5.50	5.50 – 5.625
61-63, 390 e.p.	5.625– 5.75	5.625– 5.75	5.75 – 5.875
64-66, 375 e.p.	5.875– 6.00	5.875– 6.00	6.00 – 6.25
U. S. Motor, cases (cargoes)	$1.60	$1.60	$1.60
64-66, cases (cargoes)	$1.70 –$1.72	$1.70 –$1.72	$1.70 –$1.72
KEROSINE			
44 water white	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50
41-43 prime white	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50
Water white, cases (cargoes)	$1.40	$1.40	$1.40
Prime white, cases (cargoes)	$1.30	$1.30	$1.30
GAS & BUNKER OILS			
*26-30 translucent gas oil	3.00 – 3.125	3.00 – 3.125	3.00 – 3.125
*30 plus translucent gas oil	3.00 – 3.125	3.00 – 3.125	3.00 – 3.125
Grade C bunker oil, for ships' bunkers, per bbl.	$0.90	$0.90	$0.90
Grade C bunker oil, per bbl. in cargoes	$0.65	$0.65	$0.65

*Less than ½ of 1% sulphur.
†Represents sales only.

MEXICAN CRUDE AND BUNKER OILS (f. o. b. Steamer, Tampico)			
Heavy Panuco crude taxes to be paid, per bbl.	$0.48 –$0.50	$0.50 –$0.52	$0.50 –$0.52
Grade C bunker oil for bunkering, taxes paid, per bbl.	$0.90	$0.90	$0.90
VENEZUELA CRUDE			
F. o. b. deepwater, Lake Maracaibo region	$0.76	$0.76	$0.76

SOUTH TEXAS LUBRICATING OILS (Viscosity at 100°F. cold test 0 Tanker, f. o. b. Gulf oil terminals.)			
100 vis. No. 2 unfiltered pale	4.75 – 5.75	4.75 – 5.75	4.75 – 5.75
200 vis. No. 3 unfiltered pale	6.75 – 8.25	6.75 – 8.25	6.75 – 8.25
300 vis. No. 3 unfiltered pale	7.75 – 9.50	7.75 – 9.50	7.75 – 9.50
500 vis. No. 3½ unfiltered pale	8.75 –10.50	8.75 –10.50	8.75 –10.50
750 vis. No. 4 unfiltered pale	10.25 –12.75	10.25 –12.75	10.25 –12.75
1200 vis. No. 4 unfiltered pale	14.00 –16.00	14.00 –16.00	14.00 –16.00
200 vis. No. 5-6 red oil	6.00 – 6.75	6.00 – 6.75	6.00 – 6.75
300 vis. No. 5-6 red oil	7.00 – 7.75	7.00 – 7.75	7.00 – 7.75
500 vis. No. 5-6 red oil	8.00 – 9.00	8.00 – 9.00	8.00 – 9.00
750 vis. No. 5-6 red oil	9.25 –11.50	9.25 –11.50	9.25 –11.50
1200 vis. No. 5-6 red oil	13.00 –15.00	13.00 –15.00	13.00 –15.00

Pacific Export Market

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

	March 16	March 9	March 2
Gasoline, U. S. Motor, 53-55 Gravity	4.25 – 5.00	5.00	5.00
Gasoline, U. S. Motor-blends and special cuts	4.50 – 5.25	5.25 – 5.50	5.25 – 5.50
Gasoline, 400 e.p. blend	4.75 – 5.50	5.50 – 6.00	5.50 – 6.00
Gas Oil, 30-34 per bbl.	$0.85 –$0.95	$0.90 –$0.95	$0.90 –$0.95
Diesel Oil, 27 plus, per bbl.	$0.75 –$0.85	$0.85 –$0.90	$0.85 –$0.90
Bunker oil, 14-18 per bbl.	$0.65 –$0.75	$0.64 –$0.85	$0.64 –$0.85
Fuel oil, 14-18 per bbl.	$0.60 –$0.85	$0.60 –$0.95	$0.60 –$0.95
Kerosine, 38-40 w.w., 125-150 flash, per gal.	4.50 – 5.50	5.00 – 6.00	5.00 – 6.00
Cased Goods			
Gasoline, U. S. Motor	$1.75 –$1.85	$1.75 –$1.85	$1.75 –$1.85
Gasoline, 400 e.p. blend	$1.85 –$2.00	$1.85 –$2.00	$1.85 –$2.00
Kerosine, 38-40 w.w., 125-150 flash	$1.45 –$1.50	$1.45 –$1.50	$1.45 –$1.50

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to American ports, cents per barrel.)

	March 16	
	Crude &/or Fuel	Refined Oil &/or Spirits
Calif. to U. K. or Continental ports*	21	18
Gulf to U. K. or Continental ports*	10-11	†10
North Atlantic to U. K. or Continental ports*	9/6	†8/6
Calif. to North Atlantic ports (not E. of N. Y.)	$0.45-$0.50	$0.45-$0.50
Gulf to North Atlantic ports (not E. of N. Y.)**	14-15	15

*Continental ports in the range between Bordeaux and Hamburg, both inclusive. **Venezuela loading same rate, for Tampico 2c to 3c per bbl. additional. †Two ports discharged.

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Company..... Name.....

Address..... City.....

Tank Wagon, Service Station Markets for Gasoline and Kerosine

(OIL PRICE HANDBOOK has t.w. and s.s. markets for a whole year, arranged for quick reference)

These Prices in Effect March 16, 1931, as Posted by Principal Marketing Companies

Latest Changes in Tank Wagon Prices

Gasoline

S. O. New Jersey—S. s. only cut 0.5c, Salisbury, N. C., to 19c, including 5c tax, **March 7.**

S. s. only cut 2.3c, Charlotte, N. C., to 17c, including 5c tax, **March 8.**

T. w. only cut 2.3c, Charlotte, N. C., to 16c, including 5c tax, **March 12.**

Atlantic Refining—T. w. and s. s. cut 1c, thru Pennsylvania and Delaware, **March 11.**

T. w. and s. s. cut 1c, thru Pennsylvania and Delaware, to 12c to. w., without tax, and to 17c s. s. including 3c tax, **March 16.**

T. w. and s. s. cut 2c, Jacksonville, and 1c, Brunswick, **March 11.**

S. O. Kentucky—T. w. and s. s. cut 1c, Jackson, both to 16c, including 5c tax, **March 6.**

S. s. only cut 2c ,Tampa, to 19c, including 6c tax, **March 5.**

S. O. Louisiana—T. w. and s. s. cut from 0.5 to 2.5c, thru territory, **March 13.** Cut was 1.5c generally in Louisiana, 2.5c in Arkansas, and from 0.5 to 1.5c in Tennessee.

Magnolia Petroleum—T. w. and s. s. up 1c, Little Rock, to 19.5c and 20.5c, due to tax increase to 6c, **Feb. 26.**

Continental Oil—T. w. and s. s. cut 1c, Pueblo, to 13c and 16c including 4c tax, **March 9.**

At Boise, Ida., commercial consumers given 1c per gal. allowance off all t. w. deliveries and Twin Falls, 1.5c off all t. w. deliveries.

S. O. California—Retail and wholesale prices cut 2c, San Francisco and Los Angeles, both to 17c at both points, including 3c tax, **March 7.**

Retail price only cut 2c, thru California, Oregon and Washington, **March 11.**

Canada—T. w. and s. s. cut 1.5c, thru Ontario except Fort William unchanged, thru Quebec except 2.5c at Montreal; and cut 0.5c thru New Brunswick, Nova Scotia and Prince Edward Island, all **March 12.**

T. w. and s. s. cut 2c, Manitoba and Saskatchewan; and 2 to 2.5c Alberta, all **March 14.**

Prices in western provinces unchanged.

Kerosine

S. O. New Jersey—Kerosine cut 1.3c, Charlotte, to 11c t. w., **March 7.**

Atlantic Refining—Kerosine cut 2c, Wilmington, N. C., to 10.4c, **Dec. 1, 1930.** Price is corrected in this issue.

Canada—Kerosine cut from 0.5 to 3.5c, generally thru Ontario, Quebec, New Brunswick, Nova Scotia and Prince Edward Island, **March 12.**

Kerosine cut 2 to 2.5c, thru Manitoba, Saskatchewan and Alberta, **March 14.**

Aviation Gasoline

S. O. Pennsylvania—T. w. price cut 1c, thru Pennsylvania, to 17c generally exclusive of tax, **March 11.**

S. O. NEW YORK

	T.W.	Tax	Gasoline Total T.W.	S.S.	Oil T.W.
Greater New York City: Boroughs of Manhattan, Bronx, Queens & Kings	11.3	2	13.3	15.3	10
Borough of Richmond	11.7	2	13.7	15.7	12
Albany, N. Y.	12.6	2	14.6	16.6	9.5
Buffalo, N. Y.	11.8	2	13.8	15.8	9
Rochester, N. Y.	12	2	14	16	9
Syracuse, N. Y.	12.8	2	14.8	16.8	9.5
Boston, Mass.	11.5	2	13.5	15.5	10
Augusta, Me.	12.8	4	16.8	18.8	12.8
Manchester, N. H.	12.4	4	16.4	18.1	10
Burlington, Vt.	13.3	4	17.3	19.3	10
New Haven, Conn.	12.6	2	14.6	16.6	12.6
Providence, R. I.	11.7	2	13.7	15.7	10

Discounts on gasoline: 2c per gal off posted t. w. price to dealers, thru territory, except 3c to dealers in New York City, effective Feb. 20, 1931.

ATLANTIC REFINING

Pittsburgh, Pa.	12	*	12	17	12
Philadelphia, Pa.	12	*	12	17	12
Allentown, Pa.	12	*	12	17	12
Erie, Pa.	12	*	12	17	11
Scranton, Pa.	12	*	12	17	12
Altoona, Pa.	12	*	12	17	12
Dover, Del.	12	3	15	17	12
Wilmington, Del.	12	3	15	17	12
Boston, Mass.	11.5	2	13.5	15.5	10
Springfield, Mass.	12.5	2	14.5	16.5	10
Worcester, Mass.	12.3	2	14.3	16.3	10
Fall River, Mass.	12.1	2	14.1	15.1	10
Providence, R. I.	11.7	2	13.7	15.7	10
Hartford, Conn.	12.5	2	14.5	16.5	10
New Haven, Conn.	12.6	2	14.6	16.6	10
Atlantic City, N. J.	11.5	3	14.5	16.5	11.5
Camden, N. J.	10.6	3	13.6	15.6	10.6
Trenton, N. J.	11	3	14	16	11
Annapolis, Md.	12	4	16	17	11
Baltimore, Md.	11.2	4	15.2	16.2	9.5
Hagerstown, Md.	12.7	4	16.7	17.7	11.7
Richmond, Va.	11.7	5	16.7	17.7	10.7
Wilmington, N. C.	11.4	5	16.4	17.4	10.4
Brunswick, Ga.	12	6	18	20	**14
Jacksonville, Fla.	11	6	17	19	12

Note: 2c per gal. discount off t.w. price of gasoline on sales to dealers; discount to commercial accounts under contract for one year in accordance with Code of Ethics.

*3-cent state tax is collected by retail dealer and paid by him directly to state.

**Georgia kerosine prices include 1c state tax.

S. O. KENTUCKY

Ashland, Ky.	12	5	17	19	13
Lexington, Ky.	12	5	17	18	13.5
Louisville, Ky.	11	5	16	17	11
Bowling Green, Ky.	14	5	19	21	14.5
Corbin, Ky.	13	5	18	19	15
Paducah, Ky.	12	5	17	19	12
Covington, Ky.	11	5	16	17	13.5
Clarksdale, Miss.	13	5	18	20	13.5
Gulfport, Miss.††	11	5	16	16	13.5
Jackson, Miss.	11	5	16	16	13.5
Natchez, Miss.	13	5	18	20	13.5
Vicksburg, Miss.	13	5	18	18	13.5
Birmingham, Ala‡‡	15	4	19	21	15
Mobile, Ala‡	15	4	19	21	15
Montgomery, Ala.*	15	4	19	21	15.5
Atlanta, Ga.	14	6	20	22	†13.5
Augusta, Ga.	14	6	20	22	†15.5
Macon, Ga.	14	6	20	22	†13
Savannah, Ga.	14	6	20	20	†14
Jacksonville, Fla.	13	6	19	21	14
Miami, Fla.	14	6	20	22	15
Tampa, Fla.	13	6	19	19	14
Pensacola, Fla.**	14	6	20	20	15

Note: Net price of gasoline to dealers is 2c under posted t.w. price thru S. O. Kentucky territory.

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosine at Montgomery included.

†Georgia kerosine prices include 1c state tax.

**Both tank wagon prices include 1c city tax at Pensacola which went into effect Oct. 15, 1926.

††Both tank wagon prices at Gulfport include Harrison county privilege tax of 2c.

‡Mobile gasoline prices include 1c city tax.

‡‡Birmingham gasoline prices include 1c city tax.

S.O.NEW JERSEY TERRITORY

	T.W.	Tax	Gasoline Total T.W.	S.S.	Oil T.W.
Atlantic City, N. J.	11.5	3	14.5	16.5	11.5
Newark, N. J.	10.5	3	13.5	15.5	10.5
Annapolis, Md.	12	4	16	17	11
Baltimore, Md.	11.2	4	15.2	16.2	9.5
Cumberland, Md.	13	4	17	18	12
Washington, D. C.	11.7	2	13.7	14.7	10.7
Danville, Va.	12.8	5	17.8	18.8	11.8
Norfolk, Va.	11.3	5	16.3	17.3	10
Richmond, Va.	11.7	5	16.7	17.7	10.7
Roanoke, Va.	13	5	18	18	12
Petersburg, Va.	12.3	5	17.3	18.3	11.3
Charleston, W. Va.	12.5	4	16.5	17.5	11.5
Keyser, W. Va.	13.1	4	17.1	18.1	12.1
Parkersburg, W. Va.	11.2	4	15.2	16.2	10.2
Wheeling, W. Va.	12.4	4	16.4	17.4	11.4
Raleigh, N. C.	13.2	5	18.2	19.2	12.2
Charlotte, N. C.	11	5	16	17	11
Hickory, N. C.	13.6	5	18.6	19.6	12.6
Mt. Airy, N. C.	13.5	5	18.5	19.5	12.5
Salisbury, N. C.	13.5	5	18.5	19	12.5
Charleston, S. C.	11.3	6	17.3	18.3	10.3
Columbia, S. C.	13.2	6	19.2	20.2	12.2

Note: 2c per gallon discount off retail t.w. price of gasoline to dealers only thru S. O. New Jersey territory, except Maryland and Washington, D. C. where discount is 3c.

Above prices include these inspection fees on both gasoline and kerosine, per gallon: Alabama, 1/40c on gasoline, 1/2c kerosine; Arkansas, 1/20c on both; Florida, 1/8c on both; Illinois, 3/100c on both; Indiana, 1/25c to 1/2c on both; Kansas, 3/50c on both; Louisiana, 1/32c on gasoline; Minnesota, 3/50c on both; Missouri, 1/50c to 1/2c on both; Nebraska 3/100c on both; North Carolina, 1/4c on both; North Dakota, 1/20c on both; Oklahoma, 4/25c on both; South Carolina, 1/8c on both; South Dakota, 1/10c on both; Tennessee, 2/5c on gasoline and 1/2c to 4/5c on kerosine; Wisconsin, 1/25c on both.

Kerosine inspection fees only, per gallon; Iowa 7/100c; Michigan, 1/5c to 4/5c per gal.

Tank Wagon, Service Station Markets for Gasoline and Kerosine

These Prices in Effect March 16, 1931, as Posted by Principal Marketing Companies

S. O. OHIO

	T.W.	Tax	Gasoline Total T.W.	S.S.	Oil T.W.
Ohio statewide	12	4	16	17	13
Defiance, Hancock and Marion counties	12	4	16	16	13

Note: Discount on gasoline to dealers and commercial consumers generally thru Ohio is 2c per gal. off above t.w. prices.

Discount on kerosine to dealers and commercial consumers is 3c per gal. off t.w. price thru Ohio.

S. O. INDIANA

Chicago, Ill.	11	3	14	15	9
Decatur, Ill.	11.4	3	14.4	15.4	9
E. St. Louis, Ill.	10.7	3	13.7	14.7	8.2
Joliet, Ill.	11.4	3	14.4	15.4	9
Peoria, Ill.	11.4	3	14.4	15.4	9
Quincy, Ill.	11.2	3	14.2	15.2	8.8
Springfield, Ill.	11.4	3	14.4	15.4	9
Indianapolis, Ind.	10.9	4	14.9	15.9	10.1
Evansville, Ind.	11.1	4	15.1	16.1	9.9
South Bend, Ind.	11.4	4	15.4	16.4	10.2
Detroit, Mich.	11.8	3	14.8	15.8	10.7
Grand Rapids, Mich.	11.7	3	14.7	15.7	10.6
Saginaw, Michigan	11.9	3	14.9	15.9	10.8
Green Bay, Wisc.	11.6	2	13.6	14.6	9.4
Madison, Wisc.	11.3	2	13.3	14.3	9.1
Milwaukee, Wisc.	11.1	2	13.1	14.1	8.9
La Crosse, Wisc.	12.2	2	14.2	15.2	10
Minneapolis, Minn.	12.2	3	15.2	16.2	9.9
Duluth, Minn.	12.5	3	15.5	16.5	9.9
Mankato, Minn.	12.1	3	15.1	16.1	9.7
Des Moines, Ia.	11.5	3	14.5	15.5	9.3
Davenport, Ia.	11.5	3	14.5	15.5	9.3
Sioux City, Ia.	11.1	3	14.1	15.1	8.9
Mason City, Ia.	11.5	3	14.5	15.5	9.3
St. Louis, Mo.	*10.9	2	12.9	13.9	8.3
Kansas City, Mo.	†11.9	2	13.9	14.9	7.6
St. Joseph, Mo.	†11.5	2	13.5	14.5	8.1
Fargo, N. D.	13	3	16	16	11.9
Grand Forks, N. D.	14.2	3	17.2	18.2	12.2
Minot, N. D.	13.9	3	16.9	17.9	11.9
Pierre, S. D.	12	4	16	17	10.4
Huron, S. D.	12.3	4	16.3	17.3	10.7
Wichita, Kans.	9.8	3	12.8	13.8	7.8
Bartlesville, Okla.	9.5	4	13.5	16.5	7.5

S. O. Indiana's quantity contract price schedule thru territory (except in Chicago, which see below) on tank truck deliveries of gasoline, figured from the service station price is 3c for 500 gals. or more a month; and 4½c for 75,000 gals. or more a month.

In Chicago and vicinity, these discounts apply: Over 500 gals. per month, 2c per gal. off service station price; over 1000 gals. per month 4c per gal. off service station price.

*Includes city tax of ½c.

†Includes city tax of 1c.

S. O. NEBRASKA

Omaha, Neb.	11.25	4	15.25	17.25	9.25
McCook	12.75	4	16.75	18.75	10.75
Norfolk	11.75	4	15.75	17.25	9.75
North Platte	12.75	4	16.75	18.75	10.5
Scottsbluff	12	4	16	16	10.25

Note: Discounts: 1c per gal. off tank wagon price of gasoline for 1,000 gallon dumps per month to consumers taking tank wagon delivery only discount applying only at normal points.

S. O. LOUISIANA

	Posted Retail T.W.	Tax	Total Posted Retail T.W.	Posted Retail S.S.	T.W.
Little Rock, Ark.	11	6	17	18	12
Alexandria, La.	11	*6	17	18	†13
Baton Rouge, La.	11	5	16	17	†13
New Orleans, La.	11	*6	17	18	†12
Lake Charles, La.	11	*6	17	18	†13
Shreveport, La.	11	5	16	17	†13
Lafayette, La.	11	*6	17	18	†13
Bristol, Tenn.	14	5	19	20	14
Chattanooga, Tenn.	13	5	18	19	13
Knoxville, Tenn.	13.5	5	18.5	19 5	15
Nashville, Tenn.	12.5	5	17.5	18.5	15
Memphis, Tenn.	11	5	16	17	12.5

Note: Discounts in S. O. La. territory: To dealers and commercial consumers from the tankwagon, 2c per gal. off posted retail t.w. price.

*Lake Charles, Alexandria, New Orleans and Lafayette gasoline tax includes 5c state tax and 1c parish tax. New Orleans kerosine price includes 1c parish tax in addition to 1c state tax.

†Kerosine price in Louisiana includes 1c state tax.

MAGNOLIA PETROLEUM

	T.W.	Tax	Gasoline Total T.W.	S.S.	Oil T.W.
Muskogee, Okla.	8	4	12	15	9
Oklahoma City.	6	4	10	12	9
Tulsa, Okla.	8	4	12	15	9
Fort Smith, Ark.†	13.5	4	17.5	18.5	12
Little Rock, Ark.	13.5	6	19.5	20.5	12
Texarkana, Ark.*	13	4	17	17	11
Dallas, Tex.	11	4	15	18	11
Fort Worth, Tex.	11	4	15	18	10
Houston, Tex.	11	4	15	19	11
San Antonio, Tex.	11	4	15	19	10
El Paso, Tex.	12	4	16	20	12

*Within city of Texarkana, the state tax on gasoline is 4c per gal. conforming with the Texas state tax. In this district outside of the city the 5c Arkansas tax applies.

†Within city of Fort Smith, Oklahoma tax of 4c applies. In this district outside of the city, the 5c Arkansas tax applies.

CONTINENTAL OIL

Denver, Colo.	9	4	13	16	12.5
Pueblo, Colo.	9	4	13	16	12
Grand Junc., Colo.	14	4	18	19	14.5
Casper, Wyo.	11	4	15	18	10
Cheyenne, Wyo.	12	4	16	17	11.5
Butte, Mont.	14	5	19	22	16
Helena, Mont.	15	5	20	23	16
Salt Lake City, Utah.	14.5	3.5	18	21	16
Boise, Ida.*	16.5	5	21.5	..	18
Twin Falls, Ida.†	16.5	5	21.5	..	18
Albuquerque, N. M.	11	5	16	20	14

***Less 1c on gasoline at time of delivery.**
†Less 1.5c on gasoline at time of delivery.

S. O. CALIFORNIA

	Tax	Retail Price	Posted Wholesale	T.W.
Phoenix, Ariz.	5	22.5	20.5	20
Los Angeles, Cal.	3	12.5	14.5	15.5
Fresno, Cal.	3	15	17	17
San Francisco, Cal.	3	15	17	15.5
Reno, Nev.	4	20	22	19
Portland, Ore.	4	18.5	20.5	16.5
Seattle, Wash.	3	15.5	17.5	16.5
Spokane, Wash.	3	20	22	20.5
Tacoma, Wash.	3	15.5	17.5	16.5

Note: 4c per gal. discount to dealers off posted retail price of gasoline to customers taking tank truck delivery, thru S. O. California territory except 3c discount at Phoenix plus a 2c special temporary discount Jan. 30, subject to withdrawal at any time. This discount off the retail price determines net t.w. price.

CANADA

Per Imperial Gallon, which is 1.2 American Gallons)

	T.W.	Tax	Gasoline Total T.W.	S.S	Oil T.W.
ONTARIO					
Toronto	17	5	22	25.5	18
Ottawa	17	5	22	25.5	18
North Bay	20	5	25	30.5	21
Fort William	21.5	5	26.5	30	21.5
Border Cities, including Windsor	16	5	21	24.5	15
MANITOBA					
Winn peg	18	5	23	27	18.5
SASKATCHEWAN					
Regina	23	5	28	32	22
ALBERTA					
Edmonton	24	5	29	32.5	24
Calgary	20.5	5	25.5	29	20.5
BRITISH COLUMBIA					
Vancouver	23	5	28	30	24
QUEBEC					
Montreal	17	5	22	25.5	18
Quebec City	19	5	24	27.5	20
Three Rivers	19	5	24	27.5	20
NEW BRUNSWICK					
St. John	18.5	5	23.5	27.5	20.5
Moncton	18.5	5	23.5	27.5	20.5
NOVA SCOTIA					
Halifax	18.5	5	23.5	27.5	20.5
PRINCE EDWARD ISLAND					
Charlottetown	18.5	5	23.5	27.5	20.5

Note: In districts surrounding these points 1c additional is added to city price.

NAPHTHA PRICES

	Oleum Spirits	V.M.&P. Naphtha	Cleaner Naphtha
Chicago	10.7	12.7	14.2
Detroit	13.4	14.9	15.7
Kansas City	†11.9	†13.4	†14.2
Milwaukee	12.4	*15.9	*16.7
Minneapolis	**16.7	**18.2	**19
St. Louis	11.6	13.1	13.9
New York		14	20
Boston		17	20

*Includes 2c state tax. †Includes 1c city tax.
**Includes 3c state tax.

Petroleum Spirits (Solvent)

Tank Cars (F.o.b.refinery or seaboard terminal)	
New York harbor	10.00
Philadelphia district	10.00
Providence	10.50
Tank Wagon or Steel Barrels	
New York City	14
Syracuse	17
Rochester	18
Buffalo	16
Providence	17
Boston	17
Bridgeport	15
Newark	16
Philadelphia	14
Lancaster	17
Altoona	17
Baltimore	17

Note: 2c off above t.w. prices to large buyers in some instances.

Aviation Gasoline Prices

Following are tank wagon prices of aviation gasoline in principal marketing territories showing state and municipal taxes:

S. O. NEW JERSEY

Prices in Effect March 16, 1931

	T.W.	Tax	Total T.W.
Newark, N. J.	16.9	*	16.9
Baltimore, Md.	16.2	4	20.2
Washington, D. C.	17	2	19

*New Jersey road tax of 3c does not apply on aviation gasoline, exemption being claimed at time of purchase.

All above prices are on Stanavo Aviation Gasoline.

COLONIAL BEACON OIL CO.

New York City	17.5	2	19.5
Boston	17	2	19

S. O. PENNSYLVANIA

Philadelphia, Pa.	17	3	20
Pittsburgh, Pa.	17	3	20
Altoona, Pa.	17	3	20

S. O. OHIO

Thru Ohio	15	4	19

Discounts given by S. O. Ohio: For airport delivery only; 2,000 gals. or over per month, 1c per gal.; 6,000 gals. or over per month, 2c; 12,000 gals. and over per month, 3c; 24,000 gals. and over per month, 4c.

S. O. INDIANA

Chicago	14	3	17
Indianapolis, Ind.	14.3	4	18.3
Detroit, Mich.	14.8	3	17.8
Milwaukee, Wis.	14.1	2	16.1
Minneapolis, Minn.	15.2	3	18.2
St. Louis, Mo.	13.4	2	15.4
Kansas City, Mo.	13.9	2	15.9
Fargo, N. D.	16.9	3	19.9
Huron, S. D.	15.3	4	19.3
Wichita, Kan.	12.8	3	15.8

In S. O. Indiana territory, buyer pays state and city taxes on aviation gasoline, and if he can get a refund from the state, he does so. Kansas City tax of 3c includes 1c city tax.

S. O. LOUISIANA

New Orleans, La.	18	6	24
Nashville, Tenn.	20	5	25
Memphis, Tenn.	19	5	24

2c per gal. discount off above posted retail t.w prices to dealers and commercial consumers.

(*Continued on Page 124*)

"How About Interest on Investment, and Depreciation on Hackney Permanent Containers?"

Let us consult with you regarding the possibility of using Hackney permanent containers to ship your liquid or dry bulk materials. Together, we may be able to work out a substantial saving in your shipping costs.

THAT'S a logical question that users of single trip containers are sure to ask. And the answer lies in the actual *cost per trip* of delivering the products to their destination.

After charging interest and depreciation—as well as return freight, extra freight on out-shipments, maintenance, cleaning, insurance, and clerical costs—Hackneys frequently show savings as high as 50% over single trip packages made of steel or other materials.

For example, manufacturer "A" reduced his costs from $27,125 per year to $12,586 by changing from light weight shippers to Hackney Removable Head Steel Drums. Another saved $11,160 per year by using Hackney steel barrels with patented raised openings. These are only two of a large number of similar examples.

A Few Prominent Hackney Users

Sherwin-Williams
C. M. St. P. & P.
Swift & Co.
Durkee Famous Foods
Cook Paint and Varnish
Colgate-Palmolive-Peet
Capitol City Products
Vacuum Oil

PRESSED STEEL TANK COMPANY

1141 Continental Bank Bldg., Chicago
1317 Vanderbilt Concourse Bldg., New York City
5719 Greenfield Avenue, Milwaukee, Wis.
485 Roosevelt Bldg., Los Angeles

Hackney
MILWAUKEE

Crude Oil Prices (in Effect March 16, 1931)

Crude prices for the whole year in OIL PRICE HANDBOOK published annually

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)

Bradford—Allegheny district (posted by Tide Water Pipe Co., Ltd.) (Effective Nov. 12, 1930) $2.15
Penna. Grade Oil in National Transit Lines (Effective Nov. 12, 1930) *1.85
Penna. Grade Oil in Southwest Penna. Pipe Lines (Effective Nov. 12, 1930) 1.80
Penna. Grade Oil in Eureka Pipe Lines (West Virginia) (Effective Nov. 12, 1930) .. 1.70
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.) (Effective Nov. 12, 1930) .1.45
Corning Grade in Buckeye Pipe Lines (Ohio) (Effective March 11, 1931) 0.80
Somerset oil in main system of Cumberland Pipe Line (posted by Ashland Refining Co.) (Effective March 6, 1931) $0.75
Ragland Grade in Cumberland Pipe Lines (Kentucky) (Effective Jan. 9, 1929) $0.60
*Oil run prior to July 1, 1929 is 5c less per bbl.

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines (Effective March 7, 1931) $0.70

MICHIGAN

(Posted by Dixie Oil Co.)

Traverse and Dundee (Muskegon), effective March 5, 1931, same gravity and price schedule as Stanolind posts in Oklahoma, Kansas and North Texas, which see below.

(Posted by Pure Oil Co.)

Midland, Midland County (March 13, 1931) .$0.75

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Effective March 6, 1931

Wooster	$0.99	Princeton	$0.80
Lima	0.90	Illinois	0.80
Waterloo	1.20	West Kentucky	0.75
Indiana	0.50		

CANADIAN CRUDE

Posted by Imperial Oil Refineries, Ltd.

Effective Oct. 28, 1930

Petrolia $1.50
Oil Springs 1.57

OKLAHOMA, KANSAS and NORTH TEXAS

Prices of *Stanolind Crude Oil Purchasing Co. (In Oklahoma, Kansas, North and North Central Texas)

Effective March 5, 1931

Below 29	$0.43	35-35.9	$0.57
29-29.9	0.45	36-36.9	0.59
30-30.9	0.47	37-37.9	0.61
31-31.9	0.49	38-38.9	0.63
32-32.9	0.51	39-39.9	0.65
33-33.9	0.53	40 and above	0.67
34-34.9	0.55		

*Prairie Oil & Gas withdrew postings in Oklahoma, Kansas and Texas, Jan. 1, 1931.

On March 5, 1931 these crude purchasers met above prices: Continental Oil Co., Eason Oil Co., Mid-Continent Petroleum Corp., Standard Oil Co. of Kansas, Tidal Refining Co., White Eagle Oil & Refining Co.

On March 10, 1931, these met Stanolind: Humble and The Texas Co.

Humble Oil & Refining Co.

Effective March 10, 1931

In North Texas, Ranger, Mexia, Powell, Boggy Creek, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona fields, all in Texas, same prices as Stanolind, which see.

Magnolia Petroleum Co.
(In Oklahoma, Kansas, North and East Central Texas)

Effective March 5, 1931

Magnolia posts same prices in all three states as Stanolind, except these lower grades:

Below 26	$0.40	27-27.9	$0.42
26-26.9	0.41	28-28.9	0.43

PANHANDLE TEXAS

Humble Oil & Refining Co.

Effective March 10, 1931

Hutchinson and Carson Counties:

Below 35	$0.38	38-38.9	0.46
35-35.9	0.40	39-39.9	0.48
36-36.9	0.42	40 and above	0.50
37-37.9	0.44		

Gray County:

Below 35	$0.43	38-38.9	$0.51
35-35.9	0.45	39-39.9	0.53
36-36.9	0.47	40 and above	0.55
37-37.9	0.49		

Above prices met by Magnolia and The Texas Co. on March 10 in Hutchinson, Carson and Gray counties.

Wheeler County: Posted by Magnolia Pet. Co. Effective Apr. 10, 1930. Humble withdrew Wheeler county postings Apr. 10, 1930.

Below 30	$0.755	37-37.9	$1.11
30-30.9	0.805	38-38.9	1.145
31-31.9	0.855	39-39.9	1.18
32-32.9	0.905	40-40.9	1.215
33-33.9	0.955	41-41.9	1.25
34-34.9	1.005	42-42.9	1.285
35-35.9	1.04	43-43.9	1.32
36-36.9	1.075	44 and above	1.355

WEST TEXAS and NEW MEXICO

Humble Oil & Refining Co.

Effective March 10, 1931

Pecos and Winkler, (West Texas) and Lea County, N. M., all grades $0.40
Crane, Upton, Crockett, Ector, Howard and Glasscock Counties, all grades $0.35

March 10, 1931, The Texas Co. same prices in Crane, Upton, Winkler and Lea counties as Humble. Oct. 28, Magnolia same prices in Winkler, Crane, Upton, Howard, Glasscock and Mitchell counties.

SOUTH and SOUTHWEST TEXAS

(Posted by Humble Oil & Refining Co.)

All Effective March 10, 1931

Mirando (Jan. 15, 1931) $0.69
Salt Flat 0.60
Darst Creek 0.60
Pettus, Bee County 0.95

(Posted by Magnolia Petroleum Co.)

Corsicana Heavy $0.45
Luling 0.45

(Posted by The Texas Co.)

Markham $0.50

NORTH LOUISIANA—ARKANSAS FIELDS

Prices of Standard Oil Co. of Louisiana

Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto, Sabine, Cotton Valley. Sarepta and Carterville.

Effective March 10, 1931

Below 29	$0.43	35-35.9	$0.57
29-29.9	0.45	36-36.9	0.59
30-30.9	0.47	37-37.9	0.61
31-31.9	0.49	38-38.9	0.63
32-32.9	0.51	39-39.9	0.65
33-33.9	0.53	40 and above	0.67
34-34.9	0.55		

Smackover, all grades $0.45
Bellevue 0.45
*Urania, La. (Oct. 30, 1930) 0.75
†East El Dorado (Calion) 0.45

*Posted by Louisiana Oil Refining Corp.
†Posted by Magnolia Petroleum Co.

March 10, 1931, The Texas Co. same schedule in Louisiana as Standard.

March 10, Magnolia met Standard schedule in Louisiana-Arkansas fields except it posts the same low grades in La.-Ark. as in Mid-Continent.

Stephens, Arkansas
Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.

Effective March 10, 1931

Below 29	$0.38	29 and above	$0.41

GULF COASTAL

Posted by Humble Oil & Refining Co.

Effective Jan. 14, 1931

Grades A	$0.80	32-32.9	$0.85
Grades B:		33-33.9	0.87
Below 25	0.69	34-34.9	0.89
25-25.9	0.71	35-35.9	0.91
26-26.9	0.73	36-36.9	0.93
27-27.9	0.75	37-37.9	0.95
28-28.9	0.77	38-38.9	0.97
29-29.9	0.79	39-39.9	0.99
30-30.9	0.81	40 and above	1.01
31-31.9	0.83		

On Oct. 28, The Texas Co. posted same prices on Grades A and B Gulf Coast crude as Humble.

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling, Humble, Pierce Junction, Sugarland, Refugio county, and Raccoon Bend. All other fields are Grades A only.

Specifications for Grade "A" crude: Gravity: 25° and below, at 60° F. Viscosity: not less than 100 seconds at 100° F. Saybolt.
Sulfur: not over .4%.

Grade "B" includes all Coastal crude which does not meet the test for "A" grades.

Crude Price Changes

(*Continued from Page* 104)

40 cents; 26-26.9, 41 cents; 27-27.9, 42 cents; and 28-28.9, 43 cents. Other grades are same as Standard's.

NEW ORLEANS.—On March 10 Standard Oil Co. of Louisiana reduced North Louisiana and Arkansas crudes in amounts ranging from 22 to 40 cents. The cut affected Caddo, Homer, Haynesville, Bull Bayou, Sabine, Crichton, DeSoto, El Dorado, Cotton Valley, Sarepta, Carterville, Smackover and Bellevue crudes.

The gravity and price schedule for all above fields, excepting Smackover and Bellevue, is the same as Stanolind's schedule in the Mid-Continent. Minimum grade is below 29 gravity, posted at 43 cents, with 2 cent differential for each succeeding degree of gravity, to top grade of 40 and above, which is $0.67 per barrel.

The reduction on Smackover, Ark. was 25 cents, making new price $0.45 per barrel.

Bellevue, La., was reduced 55 cents, to new price of $0.45 per barrel.

Other large purchasers meeting the Standard's new prices, in addition to the Magnolia and The Texas Co., were these: Gulf Refining Co. in Caddo, Homer, Haynesville, Bull Bayou, De Soto, Crichton, Eldorado and Smackover; Louisiana Oil Refining Co. in Caddo, Cotton Valley, Carterville, Homer, Haynesville, Eldorado, Sarepta, Smackover and Bellevue; Atlantic Oil Producing Co. in Homer, Haynesville, West Eldorado and Smackover; and Shreveport-Eldorado Pipe Line Co. in Eldorado, Homer and Smackover districts.

SHREVEPORT.—On March 10 Louisiana Oil Refining Corp. revised its gravity schedule for Stephens, Ark. crude, posting only two grades in place of five it formerly posted. The new grades and prices are: below 29 gravity, 38 cents; 29 and above, 41 cents. This indicates a reduction of from 16 to 29 cents.

On March 10 Atlantic Oil Producing Co. met the Louisiana company's reductions on Stephens crude.

Urania, La., is unchanged at 75 cents.

CASPER.—On March 7 Midwest Refining Co. reduced Hogback, N. Mex. crude 35 cents, making new price $1.05 per barrel.

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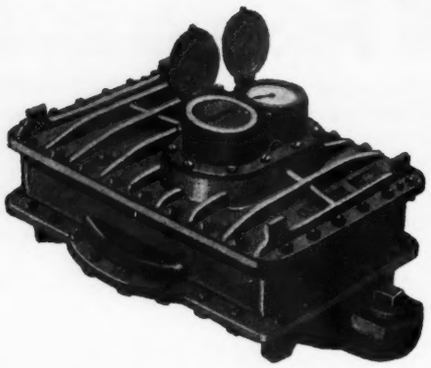

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Crude Oil Prices (in Effect March 16, 1931)

(Prices are per barrel at the well)

(Crude Oil Prices for the whole year in OIL PRICE HANDBOOK published annually)

ROCKY MOUNTAIN FIELDS
(Posted by Midwest Refining Co.)
(Salt Creek prices effective March 5, 1931)

Salt Creek, below 29°		$0.43
" " "	29-29.9	0.45
" " "	30-30.9	0.47
" " "	31-31.9	0.49
" " "	32-32.9	0.51
" " "	33-33.9	0.53
" " "	34-34.9	0.55
Salt Creek	35-35.9	0.57
" "	36-36.9	0.59
" "	37 and above	0.61

(Posted by Ohio Oil Co. and Midwest Refining Co.)

Elk Basin	$0.90
Grass Creek light	0.90
Big Muddy	0.65
Lance Creek	0.98
Rock Creek	0.66
Mule Creek	1.20
Rex Lake	1.10
Pondera	1.45
†Osage	0.50
†Cat Creek, Mont.	0.90
Sunburst, Mont.	1.55
†Hogback, N. Mex. (March 7, 1931)	1.05

†Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin. Others are prices of Ohio Oil Co.

CALIFORNIA
Standard Oil Co. of California
(Effective March 10, 1931)

Gravity	Signal Hill	Alamitos Heights Seal Beach	Huntington Beach	Inglewood	Playa Del Rey	Olinda-Brea Canon	Athens-Rosecrans Dominguez	Elwood Terrace	Torrance	Richfield	Whittier La Habra	Montebello	Coyote Hills	Santa Fe Springs	Newhall McKittrick Kern River	Midway Sunset Elk Hills Buena Vista Hills	Lost Hills	Coalinga	Wheeler Ridge
14–17.9	$0.65	$0.65	$0.65	$0.65	....	$0.65	....	....	$0.65	$0.65	$0.65	$0.65	$0.65	....	$0.55	$0.55	$0.55	$0.55	$0.55
18–18.9	.65	.65	.65	.66	....	.68	....	....	.65	.65	.65	.65	.65	....	.55	.55	.55	.55	.55
19–19.9	.65	.65	.66	.68	....	.69	....	....	.65	.65	.65	.65	.65	....	.55	.55	.57	.55	.55
20–20.9	.67	.65	.68	.70	$0.65	.71	....	....	.66	.67	.65	.65	.65	....	....	.56	.59	.55	.55
21–21.9	.70	.66	.70	.72	.66	.72	....	....	.68	.69	.65	.65	.66	$0.65	....	.57	.61	.55	.55
22–22.9	.71	.68	.71	.74	.67	.74	....	....	.70	.71	.66	.65	.67	.65	....	.58	.62	.57	.55
23–23.9	.72	.70	.73	.75	.68	.75	....	....	.71	.74	....	.65	.69	.65	....	.61	.64	.59	.55
24–24.9	.73	.72	.75	.77	.69	.77	$0.65	F. O. B. Ship.	.72	.76	....	.66	.71	.65	....	.63	.66	.61	.56
25–25.9	.75	.75	.77	.81	.70	.78	.65	....	.74	.78	....	.68	.73	.66	....	.66	.67	.62	.58
26–26.9	.76	.77	.78	.85	....	.80	.65	....	.75	.80	....	.70	.74	.68	....	.69	.69	.64	.61
27–27.9	.77	.80	.80	.89	....	.82	.66	....	.77	.82	....	.72	.76	.70	....	.71	.70	.66	.63
28–28.9	.79	....	.81	.93	....	.83	.69	....	.78	.84	....	.74	.78	.72	....	.74	.72	.69	....
29–29.9	.81	....	.83	....	....	.85	.72	....	....	.86	....	.76	.80	.75	....	.76	.73	.71	....
30–30.9	.83	....	.85	....	....	.86	.75	....	....	.88	....	.78	.82	.78	....	.78	.74	.73	....
31–31.9	.85	....	.87	....	....	.88	.78	....	....	....	....	....	....	.80	....	.80	.76	.75	....
32–32.9	.87	....	.89	....	....	....	.81	....	....	....	....	....	....	.83	....	.83	.77	.77	....
33–33.9	....	....	....	....	....	....	.84	....	....	....	....	....	....	.85	....	.86	.78	.79	....
34–34.9	....	....	....	....	....	....	.88	$0.85	....	....	....	....	....	.87	....	....	.80	.81	....
35–35.9	....	....	....	....	....	....	.91	.88	....	....	....	....	....	.90	....	....	.82	.83	....
36–36.9	....	....	....	....	....	....	.94	.91	....	....	....	....	....	.92	....	....	....	....	....
37–37.9	....	....	....	....	....	....	.97	.94	....	....	....	....	....	.95	....	....	....	....	....
38–38.9	....	....	....	....	....	....	1.00	.97	....	....	....	....	....	.97	....	....	....	....	....
39–39.9	....	....	....	....	....	....	1.03	1.00	....	....	....	....	....	1.00	....	....	....	....	....
40–40.9	....	....	....	....	....	....	1.06	1.03	....	....	....	....	....	....	....	....	....	....	....
41–41.9	....	....	....	....	....	....	1.10	1.07	....	....	....	....	....	....	....	....	....	....	....
42–42.9	....	....	....	....	....	....	1.13	1.10	....	....	....	....	....	....	....	....	....	....	....

Subject to field gathering charge of 5c per bbl.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are average market prices for materials used by refiners and compounders effective on the date shown.

Refiners' Supplies

	March 16	March 9
Soda Ash Light 58% bags, cwt.	$1.20-1.38	$1.20-1.38
Silicate of Soda 60 deg. drums, cwt.	$1.75-1	$1.75-1 90
Silicate of Soda 40 deg. tank cars, cwt.	$0.70	$0
Silicate of Soda 40 deg. drums, cwt.	$1.00	$1.00
Sal Soda wks.	$0.90-1.20	$0.90-1.20
Caustic Soda 76% solid, cwt.	$2.25-2.50	$2.25-2.50
Sulfuric Acid 60 deg. tank cars, f. o. b. shipping point per ton	$11.00-12.50	$11.00-12.50
Sulfur, flowers of, cwt.	$3.10-4.00	$3.10- 4.00
Liquid Chlorine, tank cars, wks., lb.	1.75	1.75

Compounders' Supplies

	March 16	March 9
Vegetable Oils		
Linseed carloads, spot, lb.	9.60	9.40
Tanks, spot	9.00	8.80
Soya Bean, Tank, coast, lb.	7.10	7.10
Oleic Acid		
Distilled, tanks, lb.	7.50	7.50
Distilled, bbls., lb.	8.375	8.375
Saponified, tanks, lb.	7.75	7.75
Saponified, bbls., lb.	8.625	8.625
Lard Oils		
Prime Winter Strained, lb.	12.50	12.50
Extra Winter Strained, lb.	9.50	9.50
Extra, lb.	9.25	9.25
No. 1, lb.	8.75	8.75
No. 1, lb.	8.50	8.50
No. 2, lb.	8.25	8.25
Tallow oil, lb.	8.00	8.00
Neatsfoot Oil		
Pure, bbls., lb.	11.00	11.00
Extra, bbls., lb.	9.00	9.00
No. 1 bbls., lb.	8.75	8.75
Cold Pressed, lb.	15.25	15.25
Fish Oils		
Menhaden Oil		
Light Pressed, gal.	36–38	36–38
Light Pressed, tank cars, N. Y., gal.	28–30	28–30
Yellow bleached, gal.	39	39
Whale, extra winter bleached, gal.	80	80
Naval Stores		
Steam, distilled turpentine, N. Y., gal.	42	42
Steam, distilled turpentine, Savannah, gal.	40	40
Gum turpentine, N. Y., gal.	42.50-43.50	42.50-43.50
Gum turpentine, f.o.b. cars Savannah, gal.	37.50-38.50	37.50-38.50
Wood Rosin, N. Y., bbl.	$5 20	$4.56
Wood Rosin F, Savn'h, bbl.	$5 50	$4.86
Gum Rosin B, N. Y., bbl.	$4.65	$4.50
Gum Rosin B, f. o. b. cars Savannah, bbl.	$3.90	$3.75
Rosin oil, pure, gal.	56	56
Rosin, oil, compounded, gal.	50	50
Pine Tar		
Kiln burnt, bbl.	$13.00-14.00	$13.00-14.00
Retort, bbl.	$13.50-14.50	$13.50-14.50
Alcohol		
Denatured Formula 5, in bbls., per gal.	46–48	46–48

Rail Fight Against Pipelines In Doubtful State

WASHINGTON, March 16

GRAVE doubt exists among informed men as to whether the railroad executives will go through with their fight for the separation of the oil industry's pipelines from it on the basis laid down in the meeting of the Association of Railroad Executives in New York last November. The basis then paraded was an amendment to the commodities clause of the interstate commerce act so as to make it applicable to pipelines as well as to railroads.

This is not to say that they have given up the divorce idea. The present thought is that the original plan went at the problem backwards.

Traffic lawyers jeered at the basis when the program adopted by the executives was made public as being futile. The commodities clause forbids railroads to haul things they have produced or in which they have a direct or indirect interest. Pipelines do not produce petroleum or its products or have a direct or indirect interest, in a law sense, in the things which they transport.

It is more likely that the railroad executives will join with the Interstate Commerce Commission in its recommendation to Congress that the law be so changed that the producer or shipper of an article may not own or control a common carrier transportation agency. Such a recommendation was made more than a year ago.

When Congress adjourned March 4 it left unacted upon the bill introduced by Representative Hoch of Kansas making the commodities clause of the interstate commerce law applicable to pipelines. That bill had the backing of the independents.

The law-makers turned equally deaf ears to the petitions of the railroads. It left unacted upon a resolution offered by Senator Fess and an identical one in the House offered by Chairman Parker of the Interstate and Foreign Commerce committee directing the Interstate Commerce Commission to make a general investigation of all forms of transportation which, of course, included pipelines. That resolution was offered at the suggestion of the railroads.

Those resolutions were offered on account of reactions. in the Senate, against a bill passed by the House more than a year ago providing for the regulation of common carrier busses. The bill, as amended by the Senate committee on interstate commerce did not commend itself to the representatives of the railroads. They were glad to have it sent back to the committee, preferring nothing to the measure as reported from that committee.

Adoption of the Fess-Parker resolution would have been a step toward the making of a record in support of the program of the Association of Railway Executives adopted at their meeting in New York last November, one item in which called for the divorce of the pipelines from the oil industry. The executives, at that time, thought the divorce could be accomplished by making the commodities clause applicable to pipelines.

ONE part of the program of the executives, an inquiry into the competition set up for the railroads by the motor vehicle, however, is going forward under a full head of steam. For the last two weeks Chairman Brainerd, an Oklahoman who knows much more about oil than the difference between the crown block pulley and the bull wheel, and Examiner Leo J. Flynn, have been holding hearings with a view to telling Congress how destructive competition between the railroads and the motor vehicle can be removed, through the co-ordination of the two sorts of service.

Brainerd and Flynn held hearings from Boston to San Francisco before coming to Washington but not until Washington was reached did railroads send their first line officers to testify. The National Automobile Chamber of Commerce also did not put forth any particular efforts to afford light until then. However, in the past two weeks a voluminous and to the point record has been made.

The railroads showed the wounds inflicted upon them by the competition of the motor vehicle. One of the railroad witnesses, speaking for the Chicago, North Shore & Milwaukee, an electric and steam road, for instance, said that the competition of the trucks between Chicago and Milwaukee, had driven every steamship line operating between those points, into the hands of receivers. Another officer testified that between 1922 and 1930 the motor coach subsidiary of that railroad lost $287,000 and had demonstrated that a bus line operating in a territory adequately served by railroads, could not be financially successful in trying to haul passengers over regular routes on published rates of fare which had to be maintained.

The National Automobile Chamber of Commerce made no objection to the regulation of busses but vigorously fought the extension of regulation to any sort of truck operation, whether common or contract carrier or owner-operated.

The railroads divided on the subject, the Pennsylvania, for instance, objecting to the regulation of privately owned and privately operated trucks. All other truckers it thought, should be required to obtain certificates of public convenience and necessity, show financial stability and responsibility, make reports to a regulating authority, adopt uniform accounting rules and comply with rules and regulations.

Co-ordination of railroads, motors, air transport and carriers by water was suggested by the Pennsylvania so that each form could operate in the sphere of economic performance to the end that the pub-

Which Quincy?

Actually, it is not necessary for you to go outside the Quincy Line for a compressor that will exactly fit the requirements of any Service Station or Garage.

The Quincy Line is so large, and every compressor so well designed and made, that the question is not, "which make of compressor?" but, "which Quincy?"

There are fourteen sizes, in this great Quincy Line, with displacements from only 1 cu. ft. per minute all the way up to 128 cu. ft., air cooled or water cooled, as required. These are supplied as individual compressors or in complete units of compressor, motor and tank.

To help you decide, "which Quincy," we will gladly supply all the information you want, without obligation of any kind. Just write, or mail the coupon below.

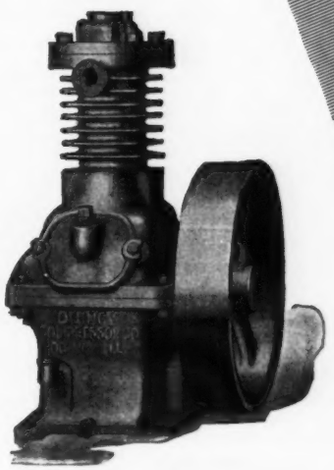
QUINCY COMPRESSOR CO.,
223 Maine St., Quincy, Ill.

Please send complete information about Quincy Compressors suitable for Service Stations and Garages.

Name.....

Address.....

City.....*State*.....



Model A

Air cooled and made in sizes from 1⅝ x 1½ to 4½ x 5. Displacements from 1 cu. ft. to 27 cu. ft., depending upon size of compressor, and motor used.

Furnished also with tight and loose pulleys, if desired, or with V-type pulley.

N5R1

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Also in other important centers

QUINCY Compressors

223 MAINE ST.
Quincy, Illinois

Transactions in Oil Shares on New York Stock Exchange

1929 High	1929 Low	1930 High	1930 Low	Listed Shares	Par Value	Company	Div. Rate	Last Paid	Transactions Week Ended March 14 Sales	First	High	Low	Last	Change§
42⅝	17½	42¼	16½	922,075	N.P.	Amerada Corp	50cQ	Jan. 30, 31	5,200	18	19	18	19	+ ¼
64¾	12½	37	5⅛	209,180	N.P.	American Republics Corp	....	.....	400	10	11	10	11	+ ¼
47¼	34½	51	30	2,240,000	$25	Associated Oil	50cQ	Dec. 31, 30	20	31	31	31	31	+ ½
77⅞	30	51⅜	16⅝	2,683,868	25	Atlantic Refining Co	‡25cQ	Dec. 15, 30	18,300	20¼	20⅜	18⅜	19⅞	— ⅜
49⅛	20	34	8⅝	2,257,108	25	Barnsdall Corp. A	25cQ	Feb. 16, 31	15,300	12½	12½	11⅜	12	— ½
34½	25	35	21	2,060,966	25	California Petroleum Corp	....	Jan. 1, 29	.....	....	....	....	....	.....
32⅞	12½	20⅜	8¾	1,444,970	N.P.	Colonial Beacon Oil Co	....	.....	700	9⅛	9⅛	9⅛	9⅛	— ⅛
37⅜	18	30½	7¾	4,610,258	N.P.	Continental Oil (Delaware)	....	.....	21,100	9⅞	10	9⅞	9⅞	+ ⅛
94¾	42¼	71⅛	22⅜	410,857	$100	General Asphalt Co	$1Q	Dec. 15, 30	5,300	36½	38⅛	36	36½	— 1
109	26	116⅞	29¼	250,000	100	Houston Oil	....	.....	30,500	55	55⅞	48¼	53½	— 1⅝
..	..	10¼	6⅝	.....	..	Houston Oil, new	....	.....	13,700	12¼	12¼	11	11½	— ½
53	13⅛	28⅝	3	699,066	10	Indian Refining	....	Dec. 15, 20	800	3¾	4	3⅜	3¾	— ¼
51¼	11½	27⅜	3½	568,816	10	do certificates	....	.....	.....	....	....	....	....	.....
38⅜	16½	29½	21½	3,994,150	N.P.	Lago Oil & Transport	....	Aug. 2, 27	.....	....	....	....	....	.....
18	7	12	3½	1,187,701	N.P.	Louisiana Oil Refining	....	.....	1,200	4⅛	4⅛	4	4	— ⅛
100¼	80	89½	60	40,000	$100	do pfd	$1.62½Q	Feb. 14, 31	.....	....	....	....	....	.....
18½	5⅞	10⅜	1¾	330,000	N.P.	Maracaibo Oil Exploration	....	.....	800	2½	2½	2¼	2¼	— ½
295	176	182	150	459,428	$100	Mexican Petroleum	$3Q	Jan. 20, 31	.....	....	....	....	....	.....
105	102	100	100	120,000	100	do pfd	$2Q	Jan. 20, 31	.....	....	....	....	....	.....
69¾	9¼	37	9¾	1,244,383	N.P.	Mexican Seaboard Oil	....	Oct. 15, 24	39,200	17	17¾	16⅛	17	— ⅛
39⅛	22⅛	33	11	1,899,138	N.P.	Mid-Continent Petroleum	50cQ	Feb. 16, 31	12,600	13⅛	13½	12¼	13⅛	— ⅜
3⅜	¾	2½	¾	908,171	N.P.	Middle States Oil ctfs	....	.....	.....	....	....	....	....	.....
..	..	32	16	6,708,086	N.P.	Ohio Oil Co	50cQ	Dec. 15, 30	32,700	15⅞	16	14	15⅛	— ⅛
69	40¼	64¼	42	1,000,000	$50	Pan American Petrol. & Trans	....	Oct. 20, 27	100	34⅛	34⅛	34⅛	34⅛	— ⅞
69¼	40½	67½	32	2,422,221	50	do B	....	Oct. 20, 27	200	35	35⅛	35	35⅛	0
15¼	3	12¾	1¾	199,370	N.P.	Panhandle Prod. & Refg	....	.....	1,000	3¾	3¾	2⅞	3	— ⅛
76	47½	80	47½	25,666	$100	do pfd	....	July 2, 23	30	15½	15½	15¼	15¼	+ 5¼
..	..	27½	6	2,937,900	N.P.	Petroleum Corp. of America	37½cQ	Dec. 31, 30	12,400	9	9⅜	7⅞	8½	— ½
47	24¼	44⅜	12	2,670,089	N.P.	Phillips Petroleum Co	50cQ	Jan. 2, 31	34,000	11⅝	11⅞	10⅞	11⅜	— ¼
3⅜	1	2½	⅛	1,184,917	$25	Pierce Oil Corp	....	.....	1,800	1	1	⅞	1	0
51½	20	52	7½	150,000	100	do pfd	....	Feb. 1, 22	400	15¼	15¼	13½	14½	— 3½
5⅞	½	7⅛	1⅜	2,500,000	N.P.	Pierce Petroleum Corp	10c	Feb. 16, 31	2,600	2¾	2⅞	2½	2¾	0
65¾	40½	54	11¼	2,435,670	$25	Prairie Oil & Gas Co	50cQ	Dec. 31, 30	9,800	16⅛	16½	14⅜	15	— ⅝
65	45	60	16¾	4,050,000	25	Prairie Pipe Line Co	‡75cQ	Dec 31, 30	12,800	22½	22½	20¾	21¼	— ⅝
25⅛	4	31	1	749,017	50	Producers & Refiners Corp	....	Sept. 15, 23	1,000	4⅜	4¾	4	4	— ½
46⅜	25⅛	38	11½	56,907	50	do pfd	....	May 4, 25	10	14⅛	14⅛	14⅛	14⅛	+ ⅛
30¾	20	27¼	7⅝	3,038,370	25	Pure Oil Co	....	Sept. 1, 30	9,600	9	9⅜	8⅞	9⅜	+ ⅛
116	108	114¾	90½	130,000	100	do 8% pfd	$2Q	Jan. 2, 31	130	99½	99½	96¼	96⅞	— ¼
49⅜	22⅜	28¼	4⅜	2,891,735	25	Richfield Oil (California)	....	Sept. 1, 30	4,600	4½	4⅜	4⅜	4⅜	0
42⅛	15	25⅜	5	1,235,270	N.P.	Rio Grande Oil Co	....	July 25, 30	3,900	7¾	7⅞	6⅝	7¼	— ⅜
64	43⅛	56½	37⅛	951,310	$13.40	Royal Dutch (N. Y. shares)	$1.3404	Jan. 31, 31	6,600	38⅝	38⅝	37¼	37¾	— ⅛
55⅜	43⅜	48⅜	26	77,492	£2	Shell Trans. & Trading	96.6c	Jan 23, 31	330	29½	29½	29⅛	29¼	— 2¾
31⅜	19	25½	5⅞	13,069,076	N.P.	Shell Union Oil Corp	....	June 30, 30	23,400	8	8	7⅜	8	— ¼
..	..	106¼	62	400,000	100	do pfd	$1.37½Q	Jan. 2, 31	2,800	62	64⅞	55	57	— 4⅛
40⅜	15	37	5⅝	869,255	10	Simms Petroleum Co	....	Sept. 15, 30	1,300	8⅛	8½	7⅝	8	— ¾
45	21	32	9¾	5,455,665	N.P.	Sinclair Consolidated Oil Corp	25cQ	Jan. 15, 31	3,800	13¼	13⅜	12½	13¼	+ ⅛
111	103	112¼	86	154,685	100	do pfd	$2Q	Feb. 14, 31	400	102⅜	103	102½	103	+ ½
46½	42	42	10⅜	1,097,650	$25	Skelly Oil Co	50cQ	Dec. 15, 30	5,800	9	9⅛	8⅝	8⅞	— ⅛
..	..	99¾	43	120,000	100	do pfd	$1.50Q	Feb. 1, 31	900	48¼	48¼	45⅝	47	— 2
..	..	106	98	750,000	100	S. O. Export Corp. pfd	$2.50S.A.	Dec. 31, 30	3,300	102⅞	104⅞	102¾	104½	+ 1½
81⅛	51½	75	42¼	13,016,434	N.P.	S. O. California	62½cQ	Dec. 15 30	26,100	46⅜	46⅝	45	45¾	— ½
..	..	49	14⅝	320,000	$25	S. O. Kansas	50cQ	Dec 15, 30	400	16½	16½	15⅝	16	+ ¼
83	48	84⅞	43½	25,443,643	25	S. O. New Jersey	‡25cQ	Dec. 15, 30	138,800	46⅞	46⅞	44⅝	46	— ⅞
48⅛	31¾	40⅜	19¾	17,809,530	25	S. O. New York	40cQ	Dec. 15, 30	45,800	23⅞	24	21⅞	22⅞	— 1⅜
86⅜	55	70	39	1,416,911	N.P.	Sun Oil Co	‡25cQ	Dec. 15, 30	1,000	42¼	42⅞	41¼	41½	— 1½
105½	100	107¾	97¾	100,000	$100	do pfd	$1.50Q	Dec. 15, 30	160	104	104	103½	104	+ ¼
24	5¼	9⅜	3¼	1,026,979	N.P.	Superior Oil Corp	....	.....	3,400	1¼	1½	1¼	1¼	— ⅛
71⅞	50	60½	28¾	9,850,724	$25	The Texas Corp	75cQ	Jan. 1, 31	48,700	32⅞	32⅞	30	30⅜	— 1⅝
23⅞	9½	14½	4	929,947	10	Texas Pacific Coal & Oil	....	Dec. 31, 29	1,300	5¼	5¼	5	5	— ¼
23½	10	17¾	5⅞	5,881,980	N.P.	Tide Water Associated Oil	30cS.A.	Feb. 16, 31	8,800	7¼	7⅜	7	7⅛	— ¼
90⅞	74⅛	89¾	56	732,550	$100	do pfd	$1 50Q	Jan. 2, 31	1,400	65	65	62⅞	63	— ½
40	14	31	13	2,191,820	N.P.	Tide Water Oil Co	20cQ	Dec. 31, 30	400	16½	17½	16½	17¼	+ 2⅛
97½	85⅛	94⅞	71	199,443	$100	do pfd	$1.25Q	Feb. 16, 31	.....	....	....	....	....	.....
..	..	24	12⅛	3,339,150	N.P.	Transcontinental Oil	....	May 1, 30	.....	....	....	....	....	.....
57	42⅛	50	20⅜	2,201,008	$25	Union Oil Co. (California)	50cQ	Feb. 10, 31	15,700	22½	23	20¾	22	— ½
..	..	38½	23	1,254,048	N.P.	Union Tank Car Co	40cQ	Dec. 1, 30	800	23	23⅛	23	23⅛	+ ⅛
42⅞	15	27	4½	777,603	N.P.	Warner Quinlan Co	....	July 3, 30	1,300	5⅜	5½	5	5	— ½
38	25	29½	26	490,000	N.P.	White Eagle Oil & Refg	....	Apr. 20, 30	.....	....	....	....	....	.....
29¾	12⅞	21	6½	428,967	N.P.	Wilcox Oil & Gas Co	....	May 10, 28	2,400	6¼	7¼	6¼	7¼	+ ¾

*New high †New low ‡Also extra s-Stock §From close of preceding week. Total sales 637,280

Aviation Gasoline Prices

(Continued from Page 117)

S. O. NEBRASKA

	T.W.	Tax	Total T.W.
Omaha	16.25	4	20.25

2c per gal. refund to reseller.

CONTINENTAL OIL CO.

Denver, Colo	12	4	16
Cheyenne, Wyo	17	4	21
Helena, Mont	18	5	23
Salt Lake City, Utah	18.5	3.5	22
Albuquerque, N. M	15	5	20
Boise, Ida	20.5	5	25.5

S. O. CALIFORNIA

Phoenix, Ariz	12	4	21.5
Los Angeles, Cal	16.5	3	19.5
San Francisco, Cal	17	3	20
Reno, Nev	21	4	25
Portland, Ore	17.5	4	21.5
Seattle, Wash	17.5	3	20.5
Spokane, Wash	21.5	3	24.5

Note: 4c per gallon added to t.w. price, in S. O. California territory, to customers taking delivery direct into the fuel tank of planes.

Offer Standard Reference Fuels for Knock Tests

NEW YORK, March 14.—The Standard Oil Development Co. has prepared a large quantity of two standard reference fuels for use of industry laboratories in making anti-knock tests. With these fuels it will be possible for various laboratories to obtain closely comparable test results without the expense of using iso-octane and normal heptane mixtures as contemplated in the octane number method of knock rating.

The secondary reference fuels have been made under close supervision and have been stored in pressure containers to avoid change in characteristics. Enough has been made to last for an extended period.

Shipments are made in 50-gallon drums or 10-gallon cases, each case containing one 5-gallon case of each of the two fuels "A" and "B." Curve sheets are provided showing calibration of the fuels in terms of octane numbers.

Orders may be placed with the company through Ross H. Dickson, Room 734, 26 Broadway, New York.

Pittsburgh Stock Exchange

Transactions Week Ended March 13, 1931

	Sales	High	Low	Last	Change Over Week
Ark. Nat. Gas	100	5½	5½	5½	— ½
do pfd	922	7	6⅞	7	+ ⅜
Devonian Oil	230	6⅛	6	6	— ½
Lone Star Gas	5,262	24½†	22¼	22¼	— ¾
do pfd	55	106	106	106	+1
Pgh. Oil & Gas	95	1½	1½	1½	0
Plymouth Oil	1,740	13½	*12	12	—3¼
Shamrock O. & G.	410	11⅜	10	10	—1
do 6s	2,000	93	93	93	....
West. Pub. Serv.	1,245	13	12¼	12½	— ¼

†Ex-dividend.
*New low record.

lic might obtain the maximum of service at the lowest cost.

A witness for the Allied Van Lines, Inc., an affiliate of furniture warehousemen, took other trucking operators to task on account of, as he said, their ignorance of costs which, he said, led to rates hurrying both railroads and truckers toward bankruptcy. He did not attribute ignorance of that sort only to the individual who is able to raise the first payment on a truck and then find himself without money or truck when his vehicle wears out, because he has not collected money enough to pay a return on the investment or allow a depreciation reserve large enough to replace the original truck.

Southern railroads, led by the Nashville, Chattanooga & St. Louis, a part of the Louisville & Nashville system, the latter itself a part of the larger system composed of itself and the Atlantic Coast Line, called for the regulation of all motor vehicles using the public highways. They claimed that the heavy busses and trucks forced the construction of roads at a cost of about $50,000 a mile whereas roads costing not more than $20,000 a mile would carry the traffic carried in the private passenger automobile and the trucks used by farmers and ordinary industries.

The southern roads contended that the contributions made by the heavy vehicles moving even on pneumatic tires, with limited wheel loads, did not pay, even in gasoline and special taxes, enough to cover the added cost of roads such as their coming had caused to be built. Witnesses for trucking companies contended that they paid taxes away out of proportion to their investment or use of the roads.

Eason Builds Gasoline Plant

TULSA, March 7.—A new gasoline plant is reported to be under construction for the Eason Oil Co. at Crescent, in west central Logan county, Okla. A stabilizer for handling the plant's product is being included. The engineering firm of Soars & Lovelace is in charge of the construction.

THE OIL INDUSTRY EXCHANGE

PERHAPS you are trying to dispose of the very thing one of our advertisers is looking for. Watch our "Wanted to Buy" Section and get together. . . . . This week one company wishes to get in touch with refineries supplying anti-knock gasoline. . . . . Another wants to buy a small compounding plant. . . . .

Positions Wanted

PETROLEUM TECHNOLOGIST, now employed, with laboratory, plant, development, and executive experience desires new connection. Graduate chemical engineer, 29 years old, married. Protestant. Address Box 678.

AUTOMOTIVE TRANSPORTATION ENGINEER, experienced operator of bulk haul units, desires connection with oil company to analyze transportation problems and operate bulk transport or sales fleet economically. Address "A," National Petroleum News, Houston, Texas.

CHEMICAL ENGINEER. Five years experience as analytical and petroleum chemist. Eager for foreign service for responsible party. Address Box 681.

Professional

L. G. Huntley J. R. Wylie, Jr.
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Washington, D. C.

Advertisers having box numbers should be addressed in care of National Petroleum News, 1213 West 3rd Street, Cleveland, Ohio, unless otherwise specified.

Wanted to Buy

WANT TO BUY SMALL COMPOUNDING PLANT, complete. Must be in good condition and priced right. Address Box 680, care this publication.

ANTI-KNOCK GASOLINE WANTED
Well established New Jersey Company desires connection with Pennsylvania refineries that can supply a good grade Anti-Knock Gasoline.
Address Box 679

Business Opportunities

STATION PROPERTIES BOUGHT AND SOLD
Send full detail
Paragon Refg. Company
Rome E. Goodwin
Room 23-2313 Madison, Toledo, Ohio

A NATIONAL SALES ORGANIZATION resources of one million dollars, established 25 years, having oil field supply offices and warehouses in Kansas City and Tulsa, wants additional lines of unquestionable merit, and of large volume, for distribution to oil producers and industrial plants in Kansas, Oklahoma and Texas. Dun credit rating A+A1.
Address Box 675

Miscellaneous

WHAT IT COSTS

"For Sale," "Wanted to Buy," "Help Wanted," "Business Opportunities."

"Miscellaneous" classifications, set in type this size without border—10 cents a word. Minimum charge, $3.00.

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Advertisements set in special type or with border—$4.00 per column inch.

Copy must reach us not later than Friday preceding date of issue.

All advertisements carried on this page are payable in advance.

Standard Oil Stocks on New York Curb

1929 High	1929 Low	1930 High	1930 Low	Outstanding Shares	Par Value	Companies	Div. Rate	Last Paid	Transactions Week Ended March 14 Sales	First	High	Low	Last	Change§
18¾	13½	18½	12¼	.....	£1	Anglo-Amer. Oil voting stk. ctfs..	.....	June 5, 29	.....	....	....	....	....	.....
17⅛	11	19	12	.....	£1	do non-voting stk. ctfs.....	.....	June 5, 29	.....	....	....	....	....	.....
2½	¾	1	⅜	500,000	N.P.	Atlantic Lobos Oil.....	.....	.....	.....	....	....	....	....	.....
4⅛	1	1½	½	200,000	$50	do pfd.....	.....	.....	.....	....	....	....	....	.....
46½	25	25	11¼	40,000	25	Borne Scrymser Co.....	$1S.A.	Oct. 15, 30	.....	....	....	....	....	.....
74¼	55	69	39⅞	200,000	50	Buckeye Pipe Line Co.....	$1Q	Dec. 15, 30	100	48¼	48¼	48¼	48¼	+ ¼
210	130	184⅞	100¼	120,000	25	Chesebrough Mfg. Co.....	‡$1Q	Dec. 30, 30	.....	....	....	....	....	.....
11⅜	5⅜	7⅝	3	.....	N.P.	Creole Petroleum Co.....	.....	.....	7,300	3¼	3⅜	3	3	— ¼
75¾	40	65¾	20¼	30,000	$50	Cumberland Pipe Line Co.....	$1Q	Dec. 15, 30	.....	....	....	....	....	.....
70½	42	54¾	26	50,000	100	Eureka Pipe Line Co.....	$1Q	Feb. 2, 31	.....	....	....	....	....	.....
...	...	6¾	2½	280,000	N.P.	Galena Oil Corp. w.i.....	.....	.....	.....	....	....	....	....	.....
...	...	37¼	23⅛	.....	N.P.	General Petroleum Corp. w.i.....	.....	.....	100	22⅜	22⅜	22⅜	22⅜	0
128	74⅛	119	57¼	2,974,645	$25	Humble Oil & Refg. Co.....	‡50cQ	Jan. 1, 31	4,500	57⅛	57⅛	55⅛	56	— 1⅞
41	22	30	15	26,490,741	N.P.	Imperial Oil, Ltd.....	12½cQ	Dec. 1, 30	6,400	16	16	15	15⅜	— 1
42⅛	26	41	14½	300,000	$10	Indiana Pipe Line Co.....	50cQ	Feb. 14, 31	1,000	19⅞	19⅞	18	18	— 2
29¾	15	24	11⅜	14,247,880	N.P.	International Petroleum Co.....	25c	Dec. 15, 30	15,700	13½	13½	12⅛	13	— ½
25⅞	10½	22⅜	11½	509,000	$12½	National Transit Co.....	25cQ	Dec. 15, 30	400	13⅜	13¼	13⅛	13¼	+ ⅛
17¾	10	21	10⅛	100,000	10	New York Transit Co.....	40cQ	Jan. 15, 31	1,600	10⅝	11⅞	10⅜	11¼	+ ⅝
63	41	54	26¼	40,000	50	Northern Pipe Line Co.....	$2S.A.	Jan. 2, 31	.....	....	....	....	....	.....
105½	103¾	108	100¾	600,000	100	Ohio Oil pfd.....	$1.50Q	Dec. 15, 30	200	99¼	99¼	98⅜	98⅜	— ¾
44½	18⅜	32	12	400,000	25	Penn Mex. Fuel Co.....	$1	Dec. 15, 30	100	13½	13½	13½	13½	— ½
50	29	33	4⅞	160,000	25	Solar Refining Co.....	.....	Dec. 20, 29	200	7¼	8	7¼	8	+ 1
23½	13	20¼	6¾	100,000	10	Southern Pipe Line Co.....	$5	Dec. 1, 30	1,400	12½	13¼	12⅜	13	0
60¼	35⅛	45⅞	18	1,200,000	25	South Penn Oil Co.....	50cQ	Dec. 31, 30	1,000	19½	19½	18⅜	18¾	— ⅝
70	45	64	32	35,000	50	Southwest Pa. Pipe Lines.....	$1Q	Dec. 31, 30	.....	....	....	....	....	.....
63	45	59⅞	30	16,850,587	25	S. O. Indiana.....	62½cQ	Dec. 15, 30	25,700	32½	32½	31⅜	31¾	— ¾
46⅞	29	40⅛	18⅞	2,577,124	10	S. O. Kentucky.....	‡40cQ	Dec. 31, 30	6,400	23	23	21½	22	— 1
50¼	40	48⅛	34	188,159	25	S. O. Nebraska.....	62½cQ	Dec. 20, 30	200	33¼	33¼	33⅛	33⅛	— 1¾
129	60	108½	43¼	560,000	25	S. O. Ohio.....	62½cQ	Jan. 2, 31	750	53⅞	54	53	53	— 1
...	...	...	...	120,000	100	do 5% pfd.....	$1.25Q	Jan. 15, 31	80	104	104¼	104	104¼	0
124½	113½	122	115¼	70,000	100	do 7% pfd.....	$1.75Q	Dec. 1, 30	.....	....	....	....	....	.....
18	5⅛	10	4	34,158	25	Swan Finch Oil Corp.....	.....	Jan. 15, 29	.....	....	....	....	....	.....
133¾	75⅛	97⅞	45⅝	5,139,887	25	Vacuum Oil Co.....	‡$1Q	Dec. 20, 30	18,000	60⅝	60⅝	54⅛	55⅞	— 4¾

*New high †New low ‡Also extra §From close of preceding week.

Independent Oils on New York Curb

1929 High	1929 Low	1930 High	1930 Low	Par Value	Companies	Transactions Week Ended March 14 Sales	First	High	Low	Last	Change§
.72	1/16	3/8	1/16	$1	Amer. Contr. Oilfields	.....	....	....	....	....	.....
8⅝	1⅛	4½	1½	5	Amer. Maracaibo.....	11,500	1½	1⅝	1⅜	1¼	0
4¾	1	1⅜	1¼	10	Argo Oil.....	.....	....	....	....	....	.....
26	3¾	16¾	4⅝	N.P.	Arkansas Nat. Gas...	1,400	5¾	5¾	5½	5½	— ¼
24¾	6½	16⅝	4¾	N.P.	do Class A.....	7,900	5⅞	6	5½	5¾	— ⅛
9	4	8⅛	6¼	10	do pfd.....	1,900	6¾	7	6¾	7	+ ½
70	50	28½	13½	N.P.	British American Oil..	.....	....	....	....	....	.....
4⅞	⅞	2¾	⅝	¼	Carib Syndicate.....	9,100	1¾	1¾	1¼	1¼	— ⅜
68½	20	44¼	13⅛	N.P.	Cities Service.....	69,300	18¼	18⅝	16⅞	17	— 1⅞
99¼	84	93⅞	52	100	do pfd.....	800	83⅜	83⅞	83⅜	83⅜	+ ⅛
9¼	8	9	7¼	10	do pref. B.....	800	7¼	7¼	7	7⅛	— ⅛
96	81	89⅛	80	100	do pref. BB.....	.....	....	....	....	....	.....
1½	⅛	⅜	⅛	1	Colombia Syndicate..	2,100	⅜	⅜	1/16	1/16	— 1/16
15	3⅞	8¼	1⅛	N.P.	Colon Oil Corp.....	1,600	2⅞	2⅞	2½	2½	— ⅛
...	...	21	3⅝	N.P.	Columbia Oil & Gas..	5,500	5⅞	5⅞	5½	5⅝	— ¼
11⅜	2⅛	5⅞	2	10	Consolidated Royalty	.....	....	....	....	....	.....
135	42	74¾	1⅛	N.P.	Cosden Oil Co.....	1,800	2¼	2⅜	2⅛	2¼	0
87	55	70	10¼	100	do pfd.....	.....	....	....	....	....	.....
2⅛	¼	1	¼	N.P.	Crown Central Pet...	200	½	½	½	½	+ 1/16
11½	4	..	..	N.P.	Crystal Oil.....	.....	....	....	....	....	.....
51⅜	51⅜	..	..	100	do pfd.....	.....	....	....	....	....	.....
26	6½	13½	4¼	N.P.	Darby Petroleum.....	100	4	4	4	4	0
..	..	21¾	21½	N.P.	do new.....	.....	....	....	....	....	.....
11	2	11	2	N.P.	Derby Oil & Refg.....	800	4	4	4	4	0
44	17	60	30	N.P.	do pfd.....	.....	....	....	....	....	.....
..	..	12	12	10	Devonian Oil.....	.....	....	....	....	....	.....
209	115	166⅞	58½	$25	Gulf Oil Corp.....	7,800	65⅛	65⅜	63¾	64½	— ¾
7½	1⅜	4	2¼	N.P.	Homaokla Oil.....	.....	....	....	....	....	.....
..	..	47½	12¾	N.P.	Indian Territory A...	2,700	16¼	16⅞	16	16½	+ ¼
..	..	53½	12⅝	N.P.	do B.....	800	16¼	16¼	16	16	+ ⅛
2⅞	⅜	1¾	⅝	10	Intercontinental Pet..	8,600	⅝	⅝	½	⅝	0
3⅝	1¼	3	⅞	N.P.	Kirby Petroleum.....	.....	....	....	....	....	.....
6⅛	1	4¾	½	N.P.	Leonard Oil & Dev...	3,300	1⅜	1½	1⅜	1⅜	+ 1/16
38⅞	18	29	5	N.P.	Lion Oil Refg.....	.....	....	....	....	....	.....
67⅞	28	55⅞	19⅝	N.P.	Lone Star Gas.....	2,700	22⅞	24⅛	22⅛	22⅛	— ⅜
..	..	31	5½	$25	MacMillan Petrol.....	.....	....	....	....	....	.....
2⅞	¼	½	1/16	1	Magdalena Synd.....	4,300	1/16	1/16	¼	1/16	— 1/16
38½	14	16	3	N.P.	Margay Oil.....	.....	....	....	....	....	.....
6⅜	2¼	7½	1¾	N.P.	Mexico Ohio Oil.....	1,000	3⅞	4⅜	3⅞	4⅜	+ 1/16
..	..	11⅞	2¼	N.P.	Middle States A v.t.c.	900	3¾	3¾	3¾	3¾	0
..	..	6	¾	N.P.	do Class B v.t.c.	800	1¼	1¼	1	1⅛	0
42	8	36¼	5	5	Missouri-Kansas P.L.	26,400	9⅝	10⅞	9	9¾	+ ⅛
1½	¼	⅝	⅛	1	Mountain & Gulf Oil..	.....	....	....	....	....	.....
22⅞	7	12⅛	4½	10	Mountain Producers..	600	5¼	5½	5⅛	5⅛	0
43⅞	24	41⅜	19⅞	N.P.	Nat. Fuel Gas.....	2,700	23½	24⅜	23⅜	23⅜	+ ¼
5	2¼	3½	1⅛	$5	New Bradford Oil....	1,900	1¼	1¼	1¼	1¼	+ ⅛
4⅜	3⅛	3½	2⅛	10	New England Fuel...	.....	....	....	....	....	.....
24½	11⅛	16⅞	4	25	N. Y. Pet. Royalty...	.....	....	....	....	....	.....
18½	6⅛	11¼	2⅛	N.P.	North Central Texas	.....	....	....	....	....	.....
19¼	8⅛	11⅜	3⅞	N.P.	Oilstocks Ltd. A.....	600	4¼	4½	4¼	4¼	+ ⅛
18¼	8½	11½	4¾	N.P.	do B.....	200	4⅞	5	4⅞	5	+ ½
26⅝	12⅛	19½	6½	N.P.	Pacific Western Oil...	400	11⅜	11½	11¼	11½	+ ¼
3½	½	2½	¼	N.P.	Pandem Oil.....	22,000	½	½	1/16	½	0
10½	2¼	4⅜	1	N.P.	Pantepec Oil.....	1,000	1½	1⅝	1½	1½	0
25½	13⅛	15	13¼	$25	Paragon Refg. B. ctfs.	.....	....	....	....	....	.....
28	17	29	19⅛	N.P.	Petroleum Corp.....	.....	....	....	....	....	.....
..	..	5⅞	½	..	do warrants.....	.....	....	....	....	....	.....
37	22	27½	16¼	N.P.	Plymouth Oil.....	3,000	13¾	13¾	12	12⅛	— 1¾
16	9	10½	3	$5	Red Bank Oil.....	.....	....	....	....	....	.....
8½	1⅛	5⅜	1	N.P.	Reiter-Foster Oil.....	800	1¼	1¼	1⅛	1⅛	— 1/16
25¼	19	23½	7	25	Richfield Oil pfd.....	2,900	6⅜	6½	5⅞	6	— ⅜
29	13	25	2¼	N.P.	Root Refining pr. pfd.	.....	....	....	....	....	.....
11	3	8⅝	2	N.P.	Ryan Consolidated...	.....	....	....	....	....	.....
5⅞	1⅞	2½	½	10	Salt Creek Consol.....	900	1⅛	1⅛	1	1	— ⅛
25⅞	9	15¼	5¼	10	Salt Creek Producers.	2,100	6¾	6¾	6⅜	6⅝	— ⅛
33⅛	10	8	1¾	25	Shreveport El Dorado	.....	....	....	....	....	.....
..	..	39⅛	39	25	Signal Oil & Gas A...	.....	....	....	....	....	.....
24	9	17	6	N.P.	Southland Royalty...	5,500	5¾	5¾	5	5⅛	— ⅛
12	4	10	2	5	Sunray Oil.....	4,400	3¾	4⅛	3⅝	4	0
23	7⅛	19½	8	N.P.	Texon Oil & Land....	1,200	11	11	9⅛	9⅞	— 1⅝
81⅛	8⅞	16	8	10	Venezuela Mexico....	.....	....	....	....	....	.....
6½	1⅜	4½	¾	5	Venezuela Petroleum.	4,400	1	1⅛	1	1⅛	+ ⅛
9⅛	2	5	2	1	Woodley Petroleum...	.....	....	....	....	....	.....
5⅜	¼	2½	⅜	N.P.	Y Oil & Gas.....	600	¾	¾	⅜	⅜	— ¼

*New High †New Low §From close of preceding week.

New York Bonds

Week Ending March 13

	High	Low	Last	Change
Asso. Oil gold 6s.....	104	103¼	103¼	— ⅛
Atlantic Refg. deb. 5s...	102½	101⅝	101⅝	0
Cal. Pet. 5s.....	96½	96⅜	96⅜	— ⅝
Cal. Pet. 5½s.....	100¾	100¼	100¼	— ½
General Pet. 5s.....	103⅜	102½	102½	— ⅛
Humble Oil & Refg. 5s..	102	101⅝	101⅝	— ⅜
Humble Oil & Refg. 5½s	102½	102⅜	102⅜	0
Pan Amer. P & T 6s.....	64	64	64	0
Pan Amer. P & T 6s.....	102¼	102	102	— ⅜
Phillips Pet. 5½s.....	80½	76½	80½	+2½
Pure Oil 5½s.....	93	91	91	—2
Pure Oil 5½s.....	89	85	85	—4½
Richfield Oil of Calif. 6s.	62½	60½	60½	—1¼
Shell Union Oil 5s.....	79¾	76⅞	77½	—2¼
Shell Union Oil 5s with war.	81	78	79½	—1½
Sinclair Con. Oil 7s.....	99½	96½	97¼	—1¼
Sinclair Con. Oil 6½s....	96¼	94¾	96⅛	+1⅛
Sinclair Con. Crude 5½s.	102¼	101⅞	102⅛	+ ⅜
Sinclair Pipeline.....	100¾	99¾	100⅜	+ ⅛
Skelly Oil 5½s.....	78	75	75	—2¾
S. O. N. J. 5s.....	104¼	103½	103½	0
S. O. N. Y. 4½s.....	100⅜	99½	99½	— ¾
Union Oil of Calif. 6s A..	107½	105⅝	107	+ ⅞
Union Oil of Calif. 5s C..	101	100	101	0
Union Oil of Calif. 5s war.	97	96¾	97	0
Warner-Quinlan 6s.....	59	57	57	—2½
White Eagle Oil 5½s war.	103	102¾	102¾	— ¼

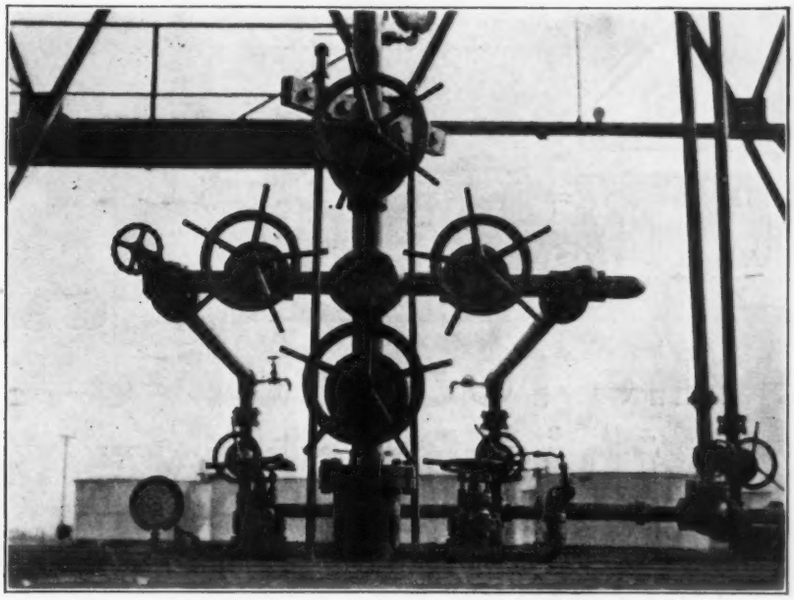
New York Curb Bonds

Week Ending March 13

	High	Low	Last	Change
Cities Serv. 5s '66.....	75	73	73	—1½
Cities Serv. 5s '50.....	79¼	76	76¾	—2¼
Cities Serv. G. 5½s '42..	79¾	79	79¾	+ ¼
Cities Serv. G. P. 6s '43..	87½	86½	87½	+ ⅞
Cont. Oil 5½s '37.....	93½	93¼	93¼	— ¼
Empire O & R 5½s '42..	77⅞	76¼	76⅛	—1
Gulf Oil 5s '37.....	102½	102	102	— ⅛
Gulf Oil 5s '47.....	103⅜	103	103¼	— ¼
Indep. Oil 6s '39.....	96½	95	95	0
Sun Oil 5½s '39.....	102	101⅞	101¾	— ⅛
Valvoline Oil 7s '37.....	98	97⅞	98	0

CLEVELAND—J. P. Long, who has been in the by-product sales division of The Corrigan, McKinney Steel Co. here since 1917, has been appointed manager of sales of that division, according to J. S. McKesson, vice president in charge of sales.

NEW YORK.—Kenneth Lydecker, formerly for 12 years with the White Co., truck manufacturer, is now with the Victaulic Co. of America here at 26 Broadway. The company makes flexible leak-proof pipe couplings.



Walworth Christmas Tree Valves at Kettleman Hills
furnished by Petroleum Equipment Company

Specify

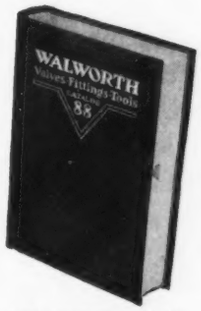
WALWORTH
VALVES
FITTINGS
AND TOOLS

for OIL

A NEW FACTOR OF SAFETY IN PRODUCTION

• Where high pressures and other conditions at the top of the well demand extra safety and operating precautions, production engineers are turning to Walworth Sigma Steel Christmas tree valves and fittings. • This hook-up at a Kettleman Hills well is typical of a Walworth installation. • Here are distinctive features of the Walworth Drilling Gate and Line Gate valves:

• Bodies of Walworth Sigma Steel—a factor which has raised steel valve castings to a new standard of excellence.



Send for a copy of the new Walworth Catalog

• Tiller type handwheels, to facilitate ease and speed in handling.

• Legs for the valves to stand on, making it easy to handle them in the field.

• You'll know a Walworth hook-up by the dark green valve bodies and bright red handwheels.

• Walworth Sigma Steel Christmas Tree Valves and fittings are available in all working pressures up to 3000 pounds. • Tests at double their rated working pressures give a wide margin of safety. • Send for our new catalog No. 88 for complete information.

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Plants at Boston, Mass.; Kewanee, Ill.; Greensburg, Pa.; and Attalla, Ala.
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Walworth International Co., 11 Broadway, New York, Foreign Representative
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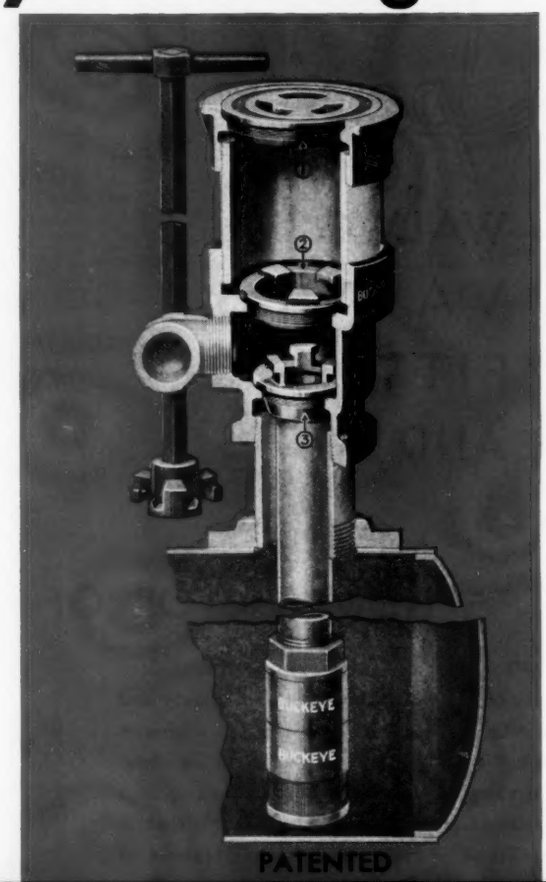
NATIONAL PETROLEUM NEWS—March 25, 1931—Vol. XXIII—No. 12
Published every week at 1213 W. 3rd St., Cleveland, Ohio. Subscription rate $3.50 per year in U. S., Canada and Mexico—$5 foreign
Entered as second class matter January 17, 1910 at Cleveland, O., postoffice under act of March 3, 1879, by National Petroleum Publishing Co.

Easy access to the foot valve . . . through this Buckeye Fitting

The Buckeye Foot Valve Extractor Fitting, included as a part of your installation, makes the foot valve as accessible for inspection as though it were above ground.

No breaking up of concrete drives . . . no digging . . . no breaking of pipe connections . . . is necessary. Only three simple operations with wrench are necessary to bring the foot valve to the surface.

The Buckeye Foot Valve Extractor Fitting makes for permanency of the installation. Fixed parts of your system are not disturbed. This item saves you from the *expensive* method of making foot valve inspections or replacements. Write us for complete information.



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Quality Fittings for the Oil Trade

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Buckeye Valves and Fittings make for a more permanent installation, and contribute to *speed, security, convenience* and *economy* in dispensing and handling gasoline. They serve the needs of the oil trade supremely well, for we are continually studying those needs and keeping Buckeye products always abreast of modern requirements. Today Buckeye Valves and Fittings (many of them representing Buckeye pioneering in design) are in general use as standard equipment, by leading oil companies and pump manufacturers.

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BETTER METER PERFORMANCE, lasting accuracy throughout long terms of service are assured by the simplicity of the new Neptune RED SEAL Gasoline Meter.

A single oscillating piston is the only moving element in the measuring chamber of a RED SEAL meter. There are no reciprocating parts, no crankshafts, valves or piston rings, no complicated mechanisms to get out of order and require adjustment.

You will be interested to see how it is possible to build a precision piston meter so simply. An interesting folder describing the RED SEAL is yours for the asking. Just return the coupon.

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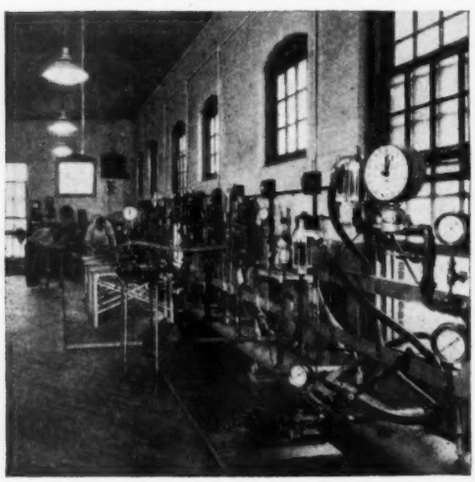
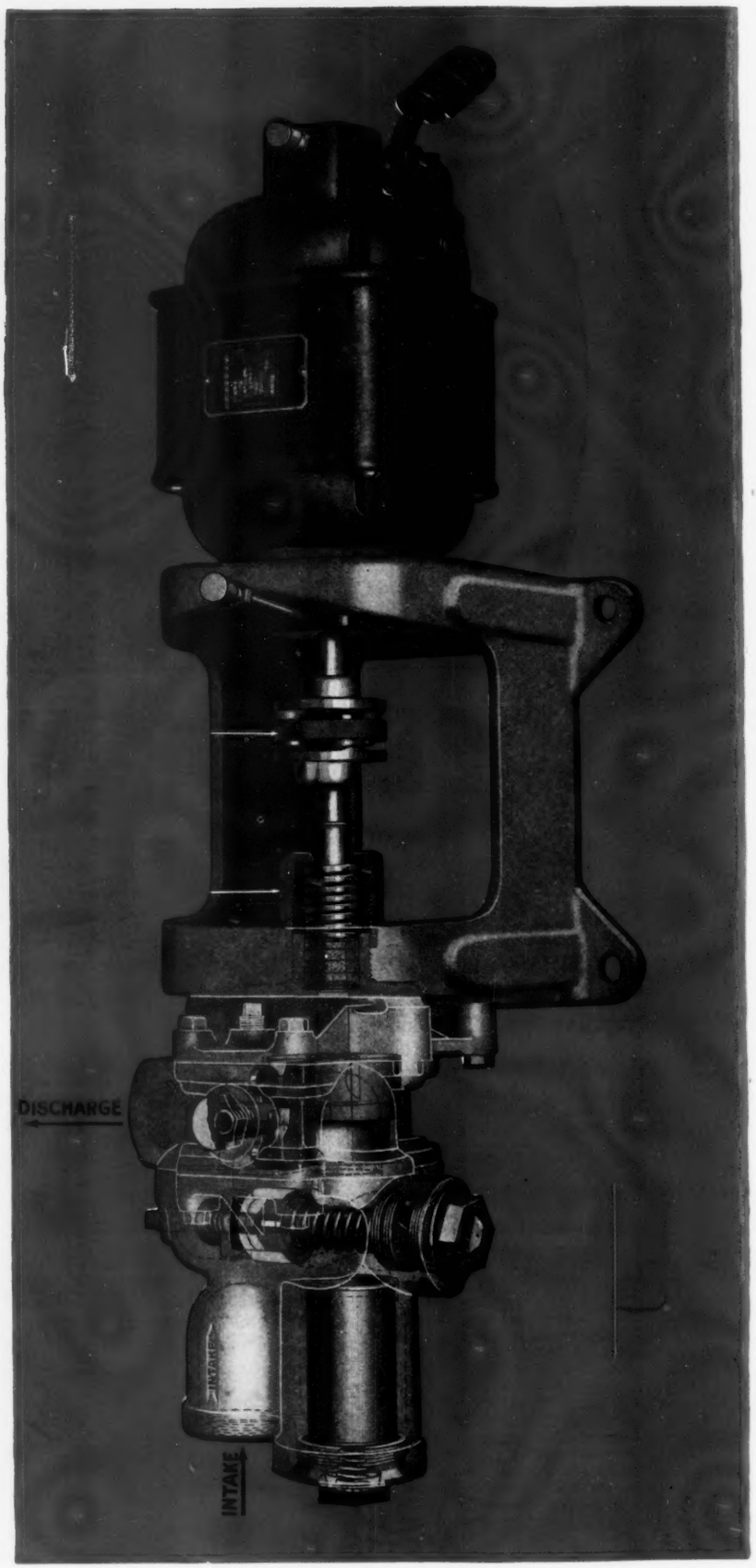
Cast iron parts of the FERRO Unit are made of automobile cylinder block iron in the Ferro Machine and Foundry Plant—one of the largest and most modern foundries.

Every Ferro Pump undergoes an actual working test and inspection before being shipped.



In the Ferro Laboratories exhaustive tests and research are carried on in an endeavor to constantly improve the Ferro Pump.



QUALITY PUMPS . . .

The Gasoline Meter System Manufacturer who uses the Ferro Pumping Unit knows he is protecting his customers against service interruptions . . . against expensive shut-downs and other annoyances that are sure to take place when the quality of any part is slighted.

● To the smallest detail, every Ferro Unit must measure up to strict Ferro Specifications before it goes into service. Castings are made in the Ferro Foundry—where hundreds of tons of metal are cast each day. Inspection and testing are in the hands of men whose experience and training assure you of uniform quality.

● The care with which Ferro Pumping Units are made, and the uninterrupted service they render, are reasons why the majority of pump manufacturers use the Ferro Unit. For your own protection . . . specify FERRO.

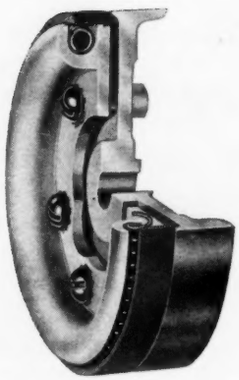
THE FERRO MACHINE & FOUNDRY CO.
Cleveland, Ohio, U. S. A.

FERRO

In the Ferro Production Assembly Line are found careful and experienced workmen, whose skill assures the quality of Ferro Pumps.

Machining and inspection of parts. Material is handled by modern conveyor system throughout the manufacture of the Ferro Pump.

Before shipping, every Ferro Pump is carefully inspected, painted and packed in strong, corrugated boxes.



The secret of Wayne's Maintained Accuracy is the specially tanned and treated Piston Leathers —452,000 used in 10 years, all from two sources of supply.

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They are serviceable too—more than 1,000,000 gallons of gasoline without any appreciable wear on the leather is no longer startling, it is commonplace.

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The Leathers in Wayne's Precision Meter Maintain Accuracy under most adverse service and weather conditions, and with varying gravities of gasoline—we make no exceptions.

Wayne has a type of Meter Pump for every purpose. Write for complete descriptive literature and prices.

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Los Angeles, California

Bat's

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When it was learned that Hypoid and other types of gears demanded a lead base grease, which would not disintegrate, be free from abrasives, and provide a tough, continuous, clinging, film of lubricant on the gear teeth, our technical staff started preparing a lead base grease which would meet these rigid requirements.

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There is never any separation of lead soap from the grease after it is shipped to the trade.

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—tanks produce a better relationship between dollar invested and dollar of revenue—

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—"cost per gallon handled"—is now the greatest importance!

Maximum pay-load capacity is the outstanding factor governing both profit and economy in today's hauling—say Petroleum "Automotive" Engineers.

Farrell has more than met this problem . . . they pioneered this idea many, many years ago when they introduced the Farrell flexible unit-tank construction . . . for there is no other type of tank design that allows for such a wide range of size and shapes . . . an exact fit . . . as if custom built . . . for every chassis.

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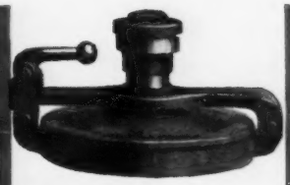
Chicago — Detroit — Cleveland — Philadelphia — New York

tanks



New — Quick Opening Quick Closing Farrell Tank Fill Caps

Of the many new Farrell features—the new quick opening-quick closing Fill Cap stands out as one of the most important.

This new fitting is the result of months of special research and test—tried out and approved by scores of Petroleum Automotive Engineers before ever being introduced to the trade. It answers a long felt demand—an absolute gasoline tight fill cap that can be operated easily and quickly.

A flip of the hand opens it—a flip closes it—*fast—safe—and tight.*

The new Farrell 6" Fill Cap is made of two pieces of pressed steel, welded together. The gasket recess gives support to the gasket on three sides (top, bottom and side) and thus eliminates any wear or abuse to the gasket-always tight.

The locking lug is a forging—the latch lever and hinge bar is malleable steel—this combination produces an *unbreakable cap.*

A special strong spring maintains a tension more than enough to form an absolute gasoline tight joint when closed.

The attractive "maximum pay-load" tank shown above has proven a real profit maker. 1000 gallon capacity in four Farrell separate unit compartments of 300, 300, 200, 200 gallons each. Semi-rectangular design. Stream line effect with steel bucket conforming to tank form.

Two new Farrell features appear on this job—the new pressed steel manhole and Quick Opening, Quick Closing Fill Cap—and new full closed end, drop panel side racks. The steel bucket box is of unusual generous size with full access thru two wide swinging doors.

GREASE DISPENSING MORE ACCURATE THAN REQUIRED BY LAW . . . .

The MERIT METAPUMP

Illustration shows 25-pint oval kit. Also made with cover-all plate to fit standard 100 - pound drums. Delivers one full pint to the stroke.

ACCURATE measure for both seller and buyer—both get a square deal when grease is dispensed by the new MERIT Metapump.

For this pump showed in official tests, using eight different types of standard gear lubricants a consistent accuracy within ⅛ to ¼ liquid ounce, about one-third the tolerance allowed by the National Weights and Measures Conference. This accuracy is due to the fact that the pump is built on a positive displacement principle (an exclusive Patented Merit feature), with built-in meter perfectly synchronized with the pump stroke.

In factory tests of both hand and machine operated dispensers, as much as 100,000 pints of grease were pumped from a single Metapump without sign of wear in pump or indicator and with no variation in accuracy. Such tests, equalling 15 to 25 years of actual field service, and actual experience with thousands of these pumps already in use, indicate the success of the design and the stamina of the product.

The MERIT Metapump is approved by the states that have effective laws regarding metered dispensing of grease by volume. It is the answer to a long known need of the oil industry for an absolutely accurate, self-sealing, leak-proof, grease measuring pump. It is MERIT quality—at a surprisingly modest cost.

The coupon below will bring you complete information and prices.

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- Metered Gasoline Dispensers
- Space-Saving Lube Outfits
- Kerosene Dispensing Outfits
- Gasoline Dispensing Outfits
- Grease Dispensing Outfits
- Barrel Pumps
- Rotary Transfer and Dispensing Pumps

MERIT EQUIPMENT CORPORATION
Main Office & Plant: 6616 Morgan Avenue
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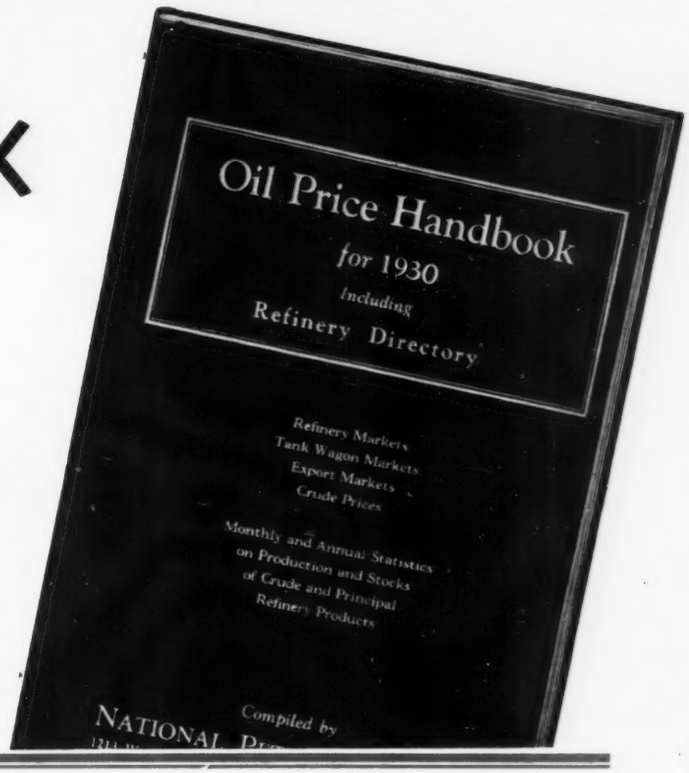

◆

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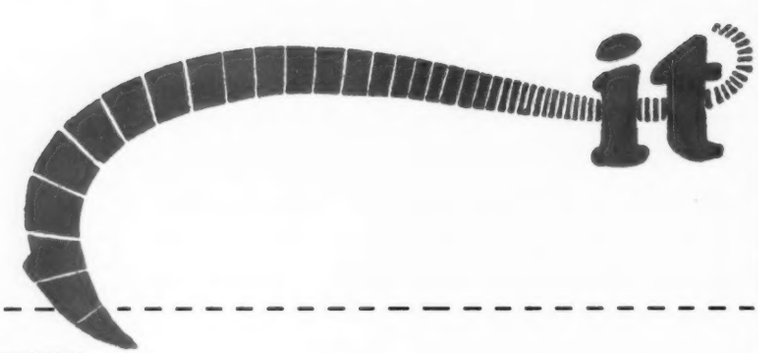

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More of them every season, along each traveled highway!

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seen first *read more easily*
remembered longer

Cincinnati Globes "stand out" and sell!

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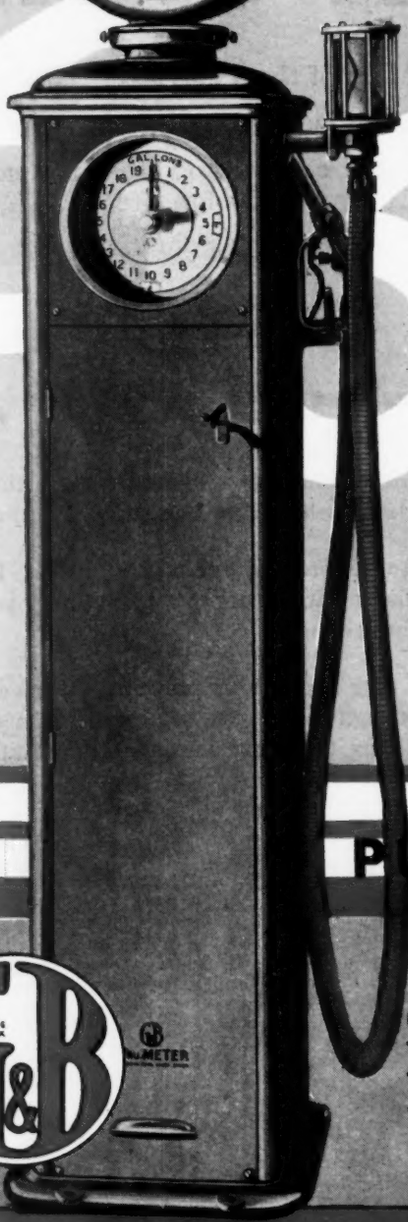
TRU-METER

with

TRU-METERED GASOLINE



POSITIVE PISTON DISPLACEMENT PUMP

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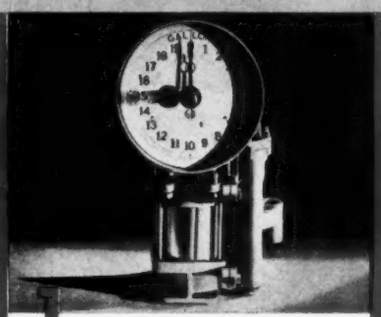
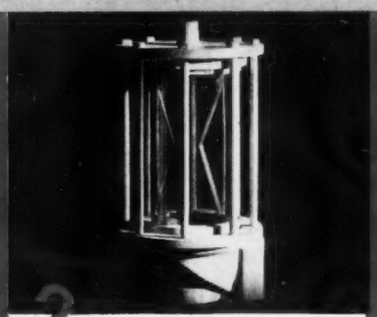
PUMPS AND TANKS FOR THE OIL TRADE

6 OUTSTANDING G & B-DEVELOPED FEATURES *never before combined in any* GASOLINE METER PUMP



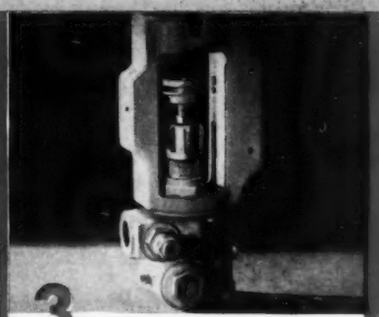
1

TRU-METER ACCURACY—Guaranteed and maintained by a positive piston displacement meter, designed and patented by G & B engineers.



2

TRU-METER AIR-FREE VISIBILITY—New type vortex-flow visible indicator automatically clears itself of all air the moment nozzle is opened.

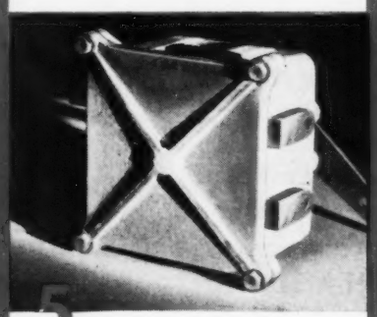


3

TRU-METER SPEED AND DURABILITY—Insured by a new corrosion-resisting pump with wearing parts of hardest steel surface—Nitrided steel.

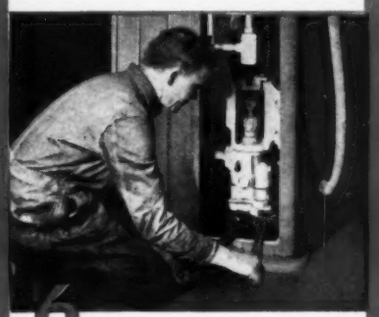
4

TRU-METER SMOOTH CONTROL—From full flow to a trickle, by a new, exclusive, patented "non-chattering" type nozzle.



5

TRU-METER ABSOLUTE SAFETY—A new explosion-proof automatic overload switch eliminates hazards and prevents burned-out motors.



6

TRU-METER STRENGTH AND ACCESSIBILITY—Rigid, non-vibrating construction with new demountable, panel-type housing for easy accessibility.

SEND COUPON FOR TRU-METER BOOKLET

NPN-1

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Send at once full information about G & B TRU-METER and the 6 big, new features never before combined in any meter pump

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HOSE NOZZLES

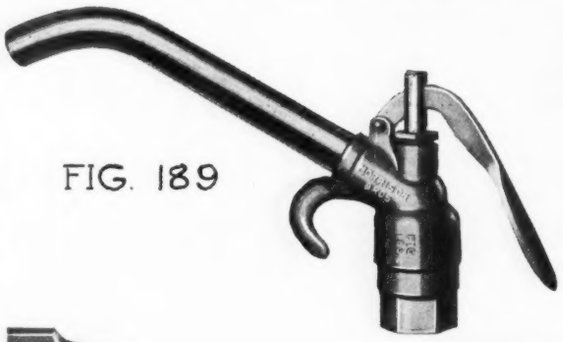

FIG. 189

FIG. 189 F

FIG. 126 A

FIG. 223

¶ Morrison Hose Nozzles are built to meet the requirements of every pump.

¶ Morrison engineers give special attention to designing of hose nozzles that are absolutely tight.

¶ The first self closing hose nozzles were built by Morrison Bros.

¶ Something over twenty different varieties and styles of nozzles are now manufactured by Morrison Bros.

¶ This offers a maximum selection to every buyer.

¶ Please write for our hose nozzle booklet.

FIG. 189 D

FIG. 126 B

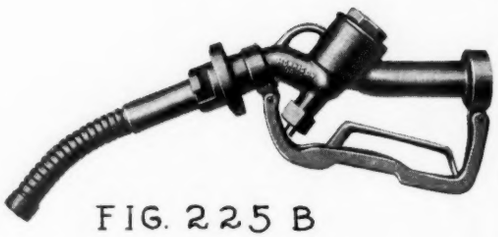

FIG. 225 B

FIG. 227

MORRISON BROS
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